Ohio 4-H Archery Project

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Acknowledgements

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Member Project Guide

Project Background
This beginning-level project is for 4-H members in the third to twelfth grades with little or no experience in archery. If you are a younger member, you may need assistance from an adult to complete this project. This project should only be taken with the approval of your parent or guardian, and your shooting activities should always be supervised by a knowledgeable adult.

The purpose of this project is to introduce you to the sport of archery. Through this introductory 4-H archery project you will learn the basic rules of safety, proper equipment selection and care, and beginning shooting techniques.

General Project Guidelines
1. Complete the Planning Your Project section of this Guide.
2. Explore each of the six Interest Areas (each of the six chapters is an Interest Area).
3. Complete all Review Questions and Things to Do in each Interest Area.
4. Participate in at least two Organized Project Activities.
5. Be involved in at least two Citizenship/Leadership Activities.

Planning Your Project
Interest Areas
Plan to explore each of these six Interest Areas (or chapters of this book). As you begin an Area, place the current date next to it. When you complete an Area, have a parent or 4-H advisor initial and date your record. Plan to complete review questions and Things to Do in each Interest Area.

<table>
<thead>
<tr>
<th>Date Started</th>
<th>Date Completed</th>
<th>Initials</th>
<th>Interest Area</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td>1. Introduction to Archery, page 9.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>2. The Language of Archery, page 11.</td>
</tr>
</tbody>
</table>
Organized Activities
Take part in two or more of the following Organized Activities. When you begin your project, record it in the Plan to Do column in the chart below. When you take part in an activity, record what you did and when you did it. You may add or change your selections any time.

Sample Organized Activities
Clinic Demonstration Exhibit
Field Trip Illustrated Talk Project Meeting
Radio/TV Presentation Speech Project Judging
Archery Competition

Report of Organized Activities

<table>
<thead>
<tr>
<th>Plan to Do</th>
<th>What You Did</th>
<th>Date</th>
</tr>
</thead>
<tbody>
<tr>
<td>EXAMPLE:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Safety Speech</td>
<td>Competed in County Safety Speaking Contest</td>
<td>June 15</td>
</tr>
<tr>
<td></td>
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<td></td>
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</tr>
</tbody>
</table>
**Leadership/Citizenship Activities**

Plan to do at least two of the following Leadership/Citizenship Activities. Place an "X" in the space beside the activities you plan to do, or design your own activity in the space provided. Keep track of your progress by marking the date when you finish each chosen activity.

<table>
<thead>
<tr>
<th>Plan to Do</th>
<th>Date Completed</th>
<th>Leadership/Citizenship Activities</th>
</tr>
</thead>
<tbody>
<tr>
<td>☐</td>
<td>_____________</td>
<td>Demonstrate archery safety at a club meeting</td>
</tr>
<tr>
<td>☐</td>
<td>_____________</td>
<td>Organize an archery clinic for your club</td>
</tr>
<tr>
<td>☐</td>
<td>_____________</td>
<td>Help another person with an archery project.</td>
</tr>
<tr>
<td>☐</td>
<td>_____________</td>
<td>Help teach archery at 4-H camp</td>
</tr>
<tr>
<td>☐</td>
<td>_____________</td>
<td>Invite someone to speak about archery at a club meeting.</td>
</tr>
<tr>
<td>☐</td>
<td>_____________</td>
<td>Serve as an officer in your club</td>
</tr>
<tr>
<td>☐</td>
<td>_____________</td>
<td>Encourage a friend to take the archery project.</td>
</tr>
<tr>
<td>☐</td>
<td>_____________</td>
<td>Enroll in a Hunter Safety Course</td>
</tr>
<tr>
<td>☐</td>
<td>_____________</td>
<td>Help someone prepare for archery project judging</td>
</tr>
<tr>
<td>☐</td>
<td>_____________</td>
<td>Help with an archery tournament or competition</td>
</tr>
<tr>
<td>☐</td>
<td>_____________</td>
<td>Plan your own activities here:</td>
</tr>
</tbody>
</table>

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[Image: A drawing of a person holding an archery bow.]
Project Review

Once you have completed your project as planned, arrange for a project review. This can take place with a parent, project advisor, or interested adult. The project review may also be part of a more comprehensive member evaluation at a time agreed upon by your club. Reviews are designed to measure what you learned, as well as your growth as a 4-H member. Members who participate in this level of evaluation are eligible for achievement awards, such as ribbons, pins, and certificates.

You may also want to take part in county project judging. This level of evaluation measures how well you did on your project. Your achievements will be compared with the achievements of others to determine the best in your project area, and to determine possible State Fair participation. For more information, contact your county Extension office.
1. Introduction to Archery

The principle behind the bow was probably discovered by accident, but it was an important discovery in human history. When the bow string is drawn, energy is stored; when it is released, the stored energy is transferred to the arrow, which is hurled forward. Before this discovery, throwing was the only way known to project a missile. The bow allowed prehistoric hunters and warriors to keep a safe distance from potentially dangerous animals or enemies.

Archery is no longer used in modern warfare, except among some tribes of South America and Central Africa. Millions of people around the world, however, enjoy the sport of archery, whether as a fierce competition, a popular form of hunting, or a relaxing backyard hobby.

Archery is a sport for people of all ages. Strength is not necessary for you to enjoy the sport. Being a proficient archer involves hand–eye coordination, consistency, and practice, practice, practice.

Things To Do

1. Read archery books and magazines to learn about the sport and its history. List the books and articles you read, and write a brief summary about what you learned from each book or article.

2. Write a one- or two-page report on the history of archery or another archery topic of interest to you.

3. Begin a scrapbook for your archery project. Include your list of books and articles and/or your written report.
2. The Language of Archery

Being a responsible archer includes knowing and understanding the language of archery. You must know what to call each piece of equipment, as well as each of its parts. Knowing the correct names of the parts makes it possible for you to discuss archery with another person.

A bow consists of a grip, a center section (riser), and two limbs. The side of the bow closest to the string is called the face; the side farthest from the string is the back. The grip is usually shaped to allow the bow hand to seat comfortably. Just above the grip on many bows is a cutout area called the sight window. Many archers attach a bow sight to the back of their bow, near the sight window. The arrow shelf is at the bottom of the sight window. Some archers shoot “off the shelf,” but most install an arrow rest just above the shelf. Some bows are designed with the arrow rest built into the top of the grip. The portion of the arrow rest that lies along the side of the sight window is called the arrow plate. The arrow plate may adjust in and out if a plunger is installed. Longbows and recurved bows have string notches cut in the limbs near the tips. This is where the looped ends of the bowstring attach to the bow. The string on a compound bow attaches to a cable, which passes through wheels or cams at the tips of the limbs. The looped ends of the bowstring are protected by windings of heavy thread or monofilament called serving. The center portion of the string has a serving of monofilament line, which protects the string from wear where the arrow and fingers touch it. The center serving should have one or more nock locators to locate the arrow at the same place on the string for every shot. The distance between the bow string and the grip on the handle riser where the bow pivots when shot (pivot point) is called the string height or brace height.

The arrow attaches to the string at the nocking point by snapping (nocking) the forked arrow nock securely to the string. The arrow nock is located at the opposite end of the arrow shaft from the arrow point. Fletching is attached to the arrow near the nock. Its purpose is to stabilize the arrow as it flies through the air. Arrows commonly have three feathers or plastic vanes as fletching. They are arranged so that the odd-colored index feather or index vane faces away from the sight window when the arrow is properly nocked. Arrows may have a decorative crest, located in front of the fletching, to help archers identify their arrows.
Review Question
1. Why is it important for you to understand the language of archery?


Things to Do
1. Demonstrate your knowledge of archery terms to your advisor or parent. Have them test you by pointing to various parts of a bow and arrow, and respond with the correct names of the parts. Have them sign their name here when you have successfully completed this:

Name

Date

Exhibit Ideas
1. Make a poster that shows a drawing of a bow and arrow with the names of the parts listed.

2. Make a smaller drawing of a bow and arrow with the names of the parts listed and place it in your scrapbook.
3. Archery Equipment

Bows
There are three types of bows: 1) longbows, 2) recurved bows, and 3) compound bows.

Longbows
A longbow is a straight piece of wood or fiberglass shaped to form limbs, string notches, and a grip. Fiberglass longbows are typically inexpensive; handcrafted wooden longbows, used by archers who prefer traditional hunting equipment, are typically expensive.

Recurved Bows
Recurved bows are commonly made of fiberglass or laminated fiberglass and wood. Some have metal risers or limbs made from a synthetic material, such as graphite. Because of their curved limbs, recurves shoot arrows faster than longbows and are often used in hunting and in target shooting. Archers who compete in Olympic events use recurved bows.
Compound Bows

Compound bows use cables and pulleys to store and release energy. The cable and pulley system creates a "let-off" or bump about halfway back during the draw. This let-off is where the maximum force of the draw is felt. Once past the let-off, it becomes much easier to draw and hold back the string. This feature makes compounds popular with bowhunters, who often have to wait at full draw while their quarry comes into range or clears an obstacle.

Arrows

Arrows are made from wood, fiberglass, aluminum, or carbon fibers. The stiffness of the arrow is called the "spine." **Always use arrows with the proper spine and length for the bow you use. Never use wood or fiberglass arrows with a compound bow.**

Arrows come with many different kinds of points, each designed for different uses. **Target points** are usually conical or bullet shaped, and are designed to cause minimal damage to foam or grass target mats. **Field points**, which may be bullet-shaped or shaped somewhat like the point of a pencil, are often used by bowhunters for preseason target practice. **Broadheads**, which have two or more cutting edges, are used exclusively for hunting. Bowhunters use other points, such as **judo heads** and **blunts**, in particular situations.
Accessories

The quiver, an essential piece of equipment for any archer, is used to hold arrows. Different styles of quivers complement different shooting styles. Belt quivers, which attach to your belt on the string-hand side, are popular with target archers. Ground quivers stick into the ground, and often feature a rack to hold your bow when you are not shooting. Bowhunters often use a quiver that mounts directly to their bow. Bowhunters may also use a hip quiver, which allows the bow to be free of the arrow weight and reduces side torque.

Always wear an armguard and finger protection when shooting your bow. Wear the armguard inside your bow arm between your wrist and elbow to keep clothing out of the string’s path and to reduce the chance of injury if the string should hit your arm.

Beginning archers should wear a finger tab on their string hand. The tab will protect the middle three fingers, which hook onto the string as it is drawn. More experienced archers sometimes switch to a shooting glove or a mechanical release.

As you develop your archery skills, you may wish to add additional accessories to complement your shooting style. A sling, worn on the wrist or fingers of the bow hand, helps you keep a light grip on the bow. Bow tip protectors are placed on the bow tips to prevent wear on recurves and longbows. A clothing shield, worn on your chest, will keep your shirt or jacket away from a fully drawn bowstring. Cat whiskers attach to the bowstring to help reduce bowstring noise. A kisser button attaches to the string at the point where it will hit your lips when you are at full draw (this helps you draw the string to the same point for each shot). Stabilizers reduce bow torque, which helps improve the bow’s shooting qualities. Advanced target archers install a clicker inside the sight window to signal when they have reached full draw.
Review Questions
1. Name three types of bow design.

2. From what materials are bows typically made?

3. From what materials are arrows typically made?

4. What piece of equipment is used to hold arrows?

Exhibit Ideas
1. Cut and paste in your scrapbook pictures of different bows, arrows, and other archery accessories. Include examples of different styles of equipment and different materials used to make the equipment.
4. Equipment Selection

As a beginning archer, you should work with a knowledgeable adult to select the proper equipment to meet your needs.

Eye Dominance
The first step in selecting proper equipment is determining your dominant eye. If you wish to become a proficient archer, you should aim with your dominant eye.

Most people have a dominant eye, just as they have a dominant hand or foot. When you look at something with both eyes open, your dominant eye aligns directly with the object unless an obstruction interferes with a clear line of sight.

Shooting skills are more easily learned and proficiently developed when shooters use their dominant eye. Follow the instructions in the box to determine eye dominance.

**Determining Your Dominant Eye**

1. Recruit a partner to help you with this test (parent, friend, sister, or brother). Have your partner face you, about 10 feet away.
2. Extend your arms straight out in front of you, with your hands flat and your palms facing down.
3. Place one thumb on top of the other.
4. Bend your wrists so that the backs of your hands are facing you.
5. Tilt your hands together until the fingers overlap, creating a small triangular opening.
6. Keeping both eyes open, center your partner’s nose in the triangular opening.
7. Slowly bring your hands back to your face, keeping your partner’s nose centered in the opening. Your hands will come back to your dominant eye.

If your dominant eye is on the same side of your body as your dominant hand (right eye/right hand or left eye/left hand) you will find it natural to use your dominant eye. If you are cross dominant (right eye/left hand or left eye/right hand), you have a greater challenge. Be assured, you will eventually achieve greater success by using your dominant eye and training your nondominant hand to manipulate the arrow and string.
Selecting Bows

Whether you plan to begin shooting with a longbow, a recurve, or a compound bow, the first and most important factor to consider is draw weight. With longbows and recurves, the farther back you draw the string, the greater the force you exert. Bows are designed to be drawn a standard distance, called draw length. The amount of force (measured in pounds) it takes to draw a bowstring on a recurve or longbow to the draw length is called the draw weight. The draw weight on a compound bow is measured at the point where the maximum force of the draw is felt (just before let-off). Some compound bows have an adjustable draw weight.

You need to be able to draw your bow comfortably time after time without straining, struggling, or shaking. Depending on your size and strength, a comfortable draw weight may be between 15 and 30 pounds (or more). Some beginning archers need to learn and practice basic shooting skills on a lightweight bow, then transfer those skills to a heavier bow.

For best shooting results, you should select a bow for your dominant eye (right eye/right handed bow; left eye/left handed bow).

Selecting Arrows

Depending on your needs, you may select arrows made of wood, fiberglass, or aluminum. You should not consider purchasing carbon arrows until you become more skilled as an archer.

Beginning archers who plan to make archery a lifetime hobby should select moderately priced arrows made of quality materials. As you develop your archery skills, you can easily upgrade your equipment.

Wooden Arrows

Most wooden arrows are inexpensive. With the recent popularity of traditional archery, however, better quality, more expensive wooden arrows are now available. Because wooden arrows commonly break with heavy use and warp if stored improperly, they may be less durable than arrows made from other materials. Inexpensive wooden arrows are not designed for use in compound bows or any bow with a draw weight over 25 pounds. If possible, select wooden arrows made from Port Orford Cedar.

Fiberglass Arrows

Fiberglass arrows are more durable, and slightly more expensive, than wooden arrows. Fiberglass arrows may be too heavy to fly effectively when shot from lightweight bows, and should not be used with compound bows. Fiberglass arrows are popular with people who like to bow fish.
Aluminum Arrows
Aluminum arrows are available in a range of sizes, prices, and durability. Most are durable with heavy use and are easily re-straightened. Replacing fletching, points, and nocks on aluminum arrows is also easy.

Proper Arrow Length
Next, you need to consider proper arrow length. Arrows that are too short for the archer are very dangerous; arrows that are too long do not fly well. Follow the instructions in the box to measure yourself before purchasing new arrows or using borrowed arrows.

Once you know your arrow length and the bow’s draw weight, you can select arrows to match your bow from a chart at a professional archery shop. A visit to an archery shop is helpful. Professionals can also help you select arrows with the proper spine (stiffness) for your style of shooting.

Measuring for Arrow Length
To measure for arrow length, extend your arms straight in front of you, with your palms and fingers flat against each other. Have a helper measure the distance from your breastbone to the end of your fingertips with a yardstick. The arrows you use should be approximately one inch longer than this distance. Arrows used for bowhunting should be two inches longer. Archery shops often have a special bow for measuring accurately your proper arrow length.

Fletching
Beginning archers often prefer feathers to vanes. Feathers are required if you shoot “off the shelf.” You may prefer plastic vanes if you will be shooting in wet weather or use more durable arrows. Fletching is available in different sizes.

Other Accessories
Armguards and finger tabs come in different sizes. Select protective equipment that fits you. Make sure your finger tab is designed for use on your string hand (right hand for right-eye dominant; left hand for left-eye dominant). The better quality brands will cost more, but they will last longer when used heavily. Once again, talk to the people at a professional archery shop about selecting durable protective equipment for your shooting style.
Things to Do

1. Complete the test to determine your dominant eye. Which eye is dominant?

2. List archery equipment you are using for this project in the spaces below.

<table>
<thead>
<tr>
<th>Bows</th>
<th>Design</th>
<th>Draw Weight</th>
<th>Draw Length</th>
</tr>
</thead>
<tbody>
<tr>
<td>Brand/Model</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>(example) Browning “Fox”</td>
<td>compound</td>
<td>20 lbs.</td>
<td>22 inches</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Arrows</th>
<th>Material</th>
<th>Length</th>
<th>Feathers or Vanes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Brand/Size</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>(example) Easton 1917</td>
<td>aluminum</td>
<td>24 inches</td>
<td>vanes</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Accessories</th>
<th>Accessory</th>
<th>Brand/Model</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Accessory</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>(example) Finger tab</td>
<td>Neet “Youth Tab”</td>
<td>Right-handed, medium size</td>
<td></td>
</tr>
</tbody>
</table>

Exhibit ideas

1. Photograph the equipment you are using for this project. Place the photographs in your scrapbook.

2. Mount examples of smaller archery accessories (such as arrow points, finger tabs, etc.) on a poster. Label each item on your exhibit. (Be aware that some county fairs and the State Fair prohibit certain items, such as arrows, from being exhibited. Ask your 4-H agent to explain the rules in your county.)
5. Your Archery Range

The place where you will shoot your bow is a range. You might shoot at an established range, such as a sports club or professional archery shop, or set up your own range at home.

Your home range should be located with safety in mind. Placing targets in front of a steep hillside or bank is ideal, but not essential. Targets should never be located in front of buildings, roads, sidewalks, or other areas where people or animals might pass. Set your target in a place where you have a safety zone of at least fifty yards behind the target and fifteen yards on each side. To prevent losing or breaking arrows, clear tall grass and brush within the safety zone and remove as many rocks and other hard objects as possible. **When you shoot, make certain that no people or animals are within this safety zone.**
As a beginning archer, you should practice shooting into target butts, to which you can attach paper target faces. Target butts are made of foam or natural materials, such as straw bales, tightly wound grass, or excelsior bales. Target butts made from natural materials and some types of foam will not last long unless they are protected from the weather. Be careful—some foam targets and straw bales are not dense enough to stop arrows shot from compound bows.

You must safely secure any type of target butt to prevent it from falling over when you shoot into it, when the wind blows, or when you try to pull your arrows out. You could be seriously injured if a target with arrows in it fell on you. If a target blew over in a gust of wind, arrows could bend or break. For additional safety, have spectators stand behind a rope or marked area.

Begin shooting from a distance of 10 yards. As your skills improve, increase this distance in five-yard increments (for example, 15 yards, 20 yards, 25 yards, etc.).

**Things to Do**

1. Visit an archery range at a sports club or professional archery shop. Answer the following questions:

   What is the name of the range you visited?

   __________________________________________________________
   __________________________________________________________
   __________________________________________________________
   __________________________________________________________

   Is the range indoors or outdoors?

   __________________________________________________________
   __________________________________________________________
   __________________________________________________________
   __________________________________________________________

   What materials are the target butts made from?

   __________________________________________________________
   __________________________________________________________
   __________________________________________________________
   __________________________________________________________

   What distances do archers shoot?

   __________________________________________________________
   __________________________________________________________
What are the important safety rules for the range?

Exhibit Ideas
1. Take pictures of your visit to an archery range. Place the pictures in your scrapbook.

2. Draw a diagram of your home archery range. Indicate safety zones and distances from key landmarks, such as buildings, sidewalks, and fence lines. Place the diagram on a poster or in your scrapbook.
6. Practice Makes Perfect

Equipment Safety
Always examine your equipment for safety before using it, and check it regularly while you are shooting. Set aside and do not use any piece of equipment that does not pass your safety inspection.

When inspecting your equipment, check for:
- Cracked limbs or other cracked parts on your bow
- Worn, frayed, or broken strands on your bowstring
- A loose or broken arrow rest
- A loose serving on your bowstring
- A nock locator that has sharp edges or seems loose on the bowstring
- A cracked, broken, or loose arrow nock
- A loose point on an arrow
- Arrows with missing feathers or vanes
- Cracked or noticeably bent arrows

You can easily repair some of these conditions; others will require throwing away the broken piece of equipment. Work with a knowledgeable adult to learn how to make the following repairs:
- Replace your bowstring
- Replace your arrow rest
- Install a new nock locator
- Replace an arrow nock
- Secure or replace fletching on an arrow

Stringing Your Bow
Because recurves or longbows are typically stored unstrung, archers who use them must master the skill of safely stringing their bows. Compound bow shooters keep their bows fully strung at all times.

While stringing a bow is fairly simple, you must be careful to avoid injury to yourself or your bow.

If you carefully examine a bowstring, you will notice that one end loop is slightly larger than the other. When the bow is unstrung (not under tension), the larger
loop is placed around the bow’s upper limb, and the smaller loop is placed in the lower limb string notches. The procedure for stringing a bow will place tension on the bow limbs to allow you to slide the larger loop on the upper limb until it can be securely seated into the upper-limb string notch. Following are descriptions of how to string both a recurved bow and a longbow. Other safe ways to string your bow, which require special equipment, are the Box Stringer and the Wall Stringer.

**Recurved Bow—Cord Bow Stringer**
A cord stringer provides a safe and easy method to string a recurved bow. Cord stringers are typically made of a length of strong cord with a leather pocket attached to each end. Some styles have a leather pocket at one end and a special piece that fits over the upper bow limb at the opposite end.

To string the bow, hold the bow by the grip with the back facing up and the loose string hanging down. Slip the larger leather pocket over the tip of the lower bow limb, and the smaller pocket over the tip of the upper limb. Using a stringer with only one leather pocket, the pocket attaches to the lower limb tip, and the special piece fits over the upper limb, about ten inches below the tip. The cord should now be hanging below the bow, following the path of the bowstring. Step on the middle of the cord. Gradually pull up on the bow while guiding the string loop into the upper limb notches. Keep your fingers on the sides of the limb—never place them between the bowstring and the face of the bow. Before completely releasing tension on the cord stringer, check upper and lower string notches carefully, making sure that both string loops are fully seated in the string notches. Remove the cord stringer before using the bow. To unstring your recurved bow, reverse the procedure.

**Longbow—Step-through Method**
A cord stringer will not work on longbows. Because the limbs on a longbow are straight, rather than curved, the pockets on a cord stringer will slip off the limb tips when the bow is flexed. The method recommended for stringing a longbow is the step-through method. (The following description is for right-handed people; left-handed people should reverse left and right in the directions.)

Hold the bow straight up and down with the face to the left and the back to the right. Step between the string and the
face of the bow with your right foot. Place the lower limb tip over the front of the left ankle, and the grip portion of the bow behind your right thigh. With the heel of your right hand, push the top portion of the upper limb to the left, bending the bow. Carefully slide the string loop into the upper limb string notches with your left hand. Keep your fingers on the sides of the limb, never between the bowstring and the face of the bow.

Using the step-through method to string a recurved bow might twist the lower limb, and could void the manufacturer’s warranty. Do not use the step-through method with a recurved bow.

Be a Safe Archer!
Archery, like any sport, is fun. As with other sports, you should follow basic safety rules.

1. Shoot only with the knowledge and approval of your parent(s) or guardian(s).
2. Always handle your equipment respectfully.
3. Be aware of the danger areas on your equipment: both ends of the arrow, the tips of the bow limbs, the nock locator, and the string.
4. Only use your archery equipment when you are 100-percent mentally alert—never when you are tired, distracted, or under the influence of any drug.
5. Examine your equipment to be sure it is in perfect working condition and free from damage before you use it. Also check your equipment regularly when you’re shooting.
6. Before shooting, tie back long hair and remove any accessories that could get caught or tangled in the bowstring, such as large earrings, hood strings, or chains.
7. Always use an armguard and finger protection (or a mechanical release) when shooting.
8. Point and draw your arrow only in one direction: at your target.
9. Make sure your target is clearly visible, safe to shoot at, and appropriately placed.
10. Always be absolutely sure that the arrow’s path to the target and beyond is clear of any people, animals, or obstacles.
11. Place an arrow on the string only when you are ready to shoot.
12. Draw back and release the bowstring only when there is an arrow securely nocked on the string.
13. Always be very careful when retrieving arrows and removing them from a target. Remove the top or highest arrows first to reduce the possibility of getting poked in the eye.

14. Always walk when you are carrying arrows and/or a bow.

15. Always be a good sport by following all rules of the archery range, hunting regulations, or laws related to shooting in your city, county, or state.

The Nine Steps of Shooting

Shooting arrows can be divided into nine steps. The key to being an accurate archer is doing exactly the same things, in the same order, for each arrow that you shoot. Practice these nine steps until you have mastered your shooting skills:

1. **Stance**
2. **Nock**
3. **Set**
4. **Pre-draw**
5. **Draw**
6. **Anchor**
7. **Aim**
8. **Release**
9. **Follow-through**

Let’s examine the skills you need to master at each step.

1. **Stance**
   Find a comfortable stance, with your feet shoulder width apart. Stand sideways and square to the target; imagine a line extending from the center of the target to the toes on each of your feet. Your bow arm should be closer to the target than your string arm. Stand straight and tall, with your head up and your shoulders down and relaxed. Imagine your body being pulled straight up to the sky by a string attached to the top of your head.
2. Nock
Grasp an arrow, holding it between the fletching and the nock, and remove it from your quiver. Lay the arrow shaft on the arrow rest two to three inches behind the point. Rotate the arrow until the index feather (or vane) is pointing away from the inside of the sight window (to the left for a right-handed bow; to the right for a left-handed bow.) Slide the arrow forward until the nock is in front of the string, then back until the nock snaps on the string directly below the nock locator. You should hear and feel a "click" when the nock snaps on the string. Remember to keep your arrow pointed down range—toward your target!

3. Set
Set your bow hand on the grip, keeping your fingers relaxed, resting the grip in the web of flesh between your thumb and index finger. Keep a loose grip on the bow by lightly touching the tip of your index finger to the tip of your thumb. Set the first groove of the first three fingers of your string hand around the bowstring, making a hook. Fold your little finger and thumb back to the palm of your string hand until they touch. Keep the back of your hand relaxed. Beginners should place all three fingers under the arrow, with the top finger barely touching the underside of the arrow nock. As you develop your skills and begin to shoot longer distances, you may wish to adopt a split-finger draw, with one finger over and two fingers under the arrow.
4. Pre-draw
Raise your bow arm toward the target. Keep your shoulders down and your hands relaxed. Look at the target, and line up the bowstring with the center of the bow limbs. Rotate the elbow of your bow arm out until it clears the path of the string. The elbow of your drawing arm should be raised to the level of your nose.

5. Draw
Draw the bow with your back muscles. To do this, draw the string back by rotating your draw arm shoulder around until your elbow is directly behind the arrow. Continue to look at the target, keeping the string lined up with the center of the limbs. At full draw, your body will be in the shape of the letter "T".

6. Anchor
Having a consistent anchor point is a key to shooting consistency. If you are a beginner, draw the string back to your face and touch the tip of your index finger to the corner of your smile. As you become more skilled, you may wish to lower your anchor point to the underside of your jaw. To shoot consistently, always use the same anchor pointer.
7. Aim
Focus your eyes and concentration on the center of the target. If you are using sights, place the pin or sight ring on the center of the target. Keep the string lined up with the center of the limbs, and maintain tension on the drawn bowstring using only your back muscles.

8. Release
With your string hand firmly touching your anchor point, and your concentration or bow sight centered on the target, relax the fingers holding the drawn string. Keep your body in the shape of the letter "T" by continuing to extend the bow to the target.

9. Follow-through
Releasing the string causes your drawing hand to travel back beside your neck, ending up near your shoulder. Continue to focus on the target, and hold your follow-through position until the arrow hits the target.
Become familiar with these nine steps of shooting by practicing without your equipment. Then, using your equipment on the range, practice shooting at a target no more than 10 to 15 yards away from you. Move to a greater distance after you can consistently hit the target with every arrow. Time spent looking for arrows is time wasted.

After the Shot
Safely Handling and Removing Arrows from the Target

The most dangerous part of the sport of archery can be what happens after you shoot. Follow these safety guidelines to retrieve your arrows from the target:

- Place your bow in a safe place, such as a bow rack or bow case. Avoid placing your bow on the ground where it could be stepped on, damaged, or lost.

- Walk forward slowly, watching for arrows that fell short or bounced out of the target. Retrieve these arrows and put them in your quiver as you come to them. If an arrow has snaked under the grass, leaving the fletching buried, carefully pull it straight out in the direction that it travelled in (point end first).

- To remove an arrow from the target, stand to the side of the target. Place one hand flat on the target face next to the arrow, so the arrow shaft is touching the web of skin between the thumb and pointing finger. Grasp the arrow with the other hand as close to the target as possible and pull the arrow straight out. You may need to rotate the arrow shaft slightly as you pull. Be careful that you don’t poke yourself or anyone else standing nearby! Place each arrow in your quiver before pulling out the next arrow.

- Remove arrows at the top of the target first and work your way down. This reduces the chance of being poked in the eye.
Care and Storage of Your Equipment

With proper care and storage, your archery equipment will last many years. Before putting away your equipment, wipe any dirt or moisture from your bow and arrows with a slightly dampened cloth. Make sure everything is clean and dry before storage.

Arrows can be stored in their original box, or in a foam-lined storage case (which you can purchase). Proper storage is essential to keep wooden arrows straight, and to keep feathers from becoming matted. If the feathers do become matted, you can straighten them by holding them in the steam of a boiling tea kettle.

Recurved bows and longbows should be stored unstrung. Keep the string with the bow by wrapping a rubber band around the lower tip and string loop, allowing the upper string loop to slide down the upper limb. Your bow should be stored horizontally, supported in mid limb by two dowels or nails wrapped in tape. Standing your bow upright in a corner for long periods of time will cause the limbs to warp.

Compound bows are usually stored with the string attached. You can store a compound bow in a bow case, or on a bow rack that hangs on the wall.

You can extend the life of your bowstring by applying bowstring wax. The wax comes in a tube. To use it, rub the wax on the string and work it into the strands with your fingers or a small piece of leather. Without bowstring wax, your bow strings will fray and weaken. Strings should be waxed after each use.

Keep all of your archery accessories together in a safe place, such as a tackle box or similar container. Be sure to store the equipment out of the reach of younger children, especially if you have broadhead arrow points.

Review Questions
1. List five things to check for when examining archery equipment for safety.

2. List three safe ways to string a recurved bow.
3. Why is it not advisable to string a recurved bow using the step-through method?

4. What are the nine steps of shooting a bow?
   1. ____________________________  6. ____________________________
   2. ____________________________  7. ____________________________
   3. ____________________________  8. ____________________________
   4. ____________________________  9. ____________________________
   5. ____________________________

**Things to Do**
1. Demonstrate for your club, advisor, or parent the proper way to string a recurved bow or longbow, how to perform an equipment safety check, the proper way to shoot a bow, or how to safely remove arrows from a target.

2. Speak on archery safety at the County 4-H Health and Safety Speaking Contest.

3. Keep a log of your shooting practices. Fill out the chart on page 37 each time you practice shooting.

**Exhibit Ideas**
1. Make an informative poster on archery safety rules, the nine steps of shooting, or the proper way to remove arrows from the target.

2. Have a parent or friend take photographs of one of your archery shooting practices. Include the photographs in your scrapbook.
<table>
<thead>
<tr>
<th>Date</th>
<th>Distance</th>
<th>Number of arrows shot</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>4/16</td>
<td>10 yds.</td>
<td>30</td>
<td>only 2 arrows missed the target</td>
</tr>
</tbody>
</table>
Appendix A:

Archery Vocabulary

Aim—to focus on the center of your target while pointing a fully drawn bow at the target; if using sights, to superimpose the sighting device over the spot on the target you wish to hit with your arrow.

Anchor—to touch some portion of your drawing hand on a specific place on your body, usually your face, when the bow is fully drawn.

Anchor point—the specific place on your body that your drawing hand touches when the bow is fully drawn.

Armguard—a device worn on your forearm to protect it from being slapped by the bowstring and to hold your clothing from interfering with the bowstring.

Arrow—a projectile shot from a bow.

Arrow length—the length of shaft as measured from the insert of the nock to the end of the shaft, not including the point.

Arrow plate—the portion of the sight window that touches the arrow shaft when the arrow is resting on the bow.

Arrow rest—a projection mounted to the bow that supports the arrow.

Arrow shelf—the bottom portion of the sight window.

Back—the side of the bow away from the bowstring.

Belt quiver—an arrow container worn on the archer’s belt.

Blunt—an arrow point that is not sharp or pointed.

Bow—a handheld device with two flexible limbs, with a string connecting the two ends, used to propel arrows.

Bow sight—a device placed on the bow to aid the archer in aiming.

Bow arm or hand—the arm or hand that holds the bow.

Bowstring—the string that connects the two ends of a bow’s limbs and propels the arrow.
Bow stringer—a tool used to apply tension to a bow’s limbs, allowing the archer to string or replace the bowstring.

Bow tip protector—plastic cover placed on the lower limb tip of a bow to protect it from excessive wear caused by contact with the ground or floor.

Broadhead—a very sharp arrow point, usually with two or more cutting edges.

Butt—an archery backstop to which target faces are attached.

Center serving—an area of protective material wound around the center portion of the bowstring.

Clicker—a device mounted on the bow that signals when the arrow has been fully drawn.

Compound bow—a bow that uses cables and pulleys to decrease the amount of force needed to hold the bowstring when fully drawn.

Crest—a decorative design on the arrow’s shaft to identify an archer’s arrows.

Dominant eye—the eye with which a person naturally aims.

Draw—to pull back on the bowstring.

Draw length—at full draw, the distance from the nocking point to the grip is the “true draw length,” and the distance from the nocking point to the side of the bow farthest from the archer is the “traditional draw length.”

Draw weight—the amount of force needed to draw the bow.

Drawing hand—the hand used to pull back on the bowstring.

End—a set number of arrows shot before going to the target to score or retrieve them.

Face—the side of the bow closest to the bowstring.

Finger tab—a protective device worn on the middle three fingers of the drawing hand.

Fletching—feathers or plastic vanes located at the rear of the arrow shaft to stabilize the arrow as it flies through the air.

Follow through—movement of the drawing hand and arm after the release of the bowstring.
**Full draw**—the position of the archer when the arrow is fully drawn and the drawing hand is touching the anchor point.

**Grip**—the portion of the bow that is held by the bow hand.

**Ground quiver**—a container to hold arrows that is placed on the ground, usually where the archer can reach the arrows while shooting.

**Hip quiver**—a container to hold arrows that is worn on the archer’s hip.

**Index feather or vane**—the odd-colored feather or vane that points away from the inside of the sight window when the arrow is properly nocked.

**Judo point**—an arrow point with springy wires attached to it to limit the depth the arrow can penetrate the ground or target.

**Kisser button**—a device that attaches to the bowstring and hits the archer’s lips when the arrow is fully drawn.

**Let down**—to carefully release tension on a drawn bow without shooting an arrow or releasing the string.

**Let-off**—when drawing a compound bow, the point just after the maximum draw weight, when a “bump” is felt and the draw weight decreases to a fraction of the maximum.

**Limb**—the upper and lower parts of the bow that bend when the bow is drawn.

**Longbow**—a style of bow which, when unstrung, is straight.

**Matt**—a target butt made of tightly wound grass.

**Mechanical release**—a device used by some archers instead of fingers to draw back on the bowstring.

**Nock**—1. (noun) a plastic piece, located at the end of the arrow opposite the point, that snaps on to the bowstring; 2. (verb) the act of securing the arrow to the bowstring.

**Nock locator**—a device that is attached to the bowstring and indicates where the arrow is to be nocked.

**Nocking point**—the point on the bowstring where the arrow is nocked.

**Notch**—grooves cut into the limbs of the bow that provide points of attachment for the bowstring.

**Pivot point**—the point on the grip of an undrawn bow that is the greatest distance from the string.
**Point**—the metal tip of the arrow.

**Plunger**—a device used with an arrow rest that adjusts to change the distance from the arrow to the inside of the sight window.

**Quiver**—an accessory used to hold arrows.

**Range**—a place where archers shoot their bows.

**Recurved bow**—a style of bow that, when unstrung, has limbs that curve away from the face.

**Release**—the act of relaxing the fingers holding the bowstring at full draw.

**Riser**—the middle section of the bow that divides the upper and lower limbs.

**Serving**—tightly wound thread or plastic line that protects the upper and lower string loops and the center portion of the bowstring.

**Shaft**—the length of tubing or wood that makes up the body of the arrow.

**Shelf**—the bottom portion of the sight window.

**Shooting glove**—a special three-fingered glove that can be worn to protect the tips of the fingers that draw the bowstring.

**Spine**—the stiffness of an arrow.

**Stabilizer**—a weight that can be added to a bow to improve its shooting qualities.

**Stance**—the upright body position of an archer.

**String hand**—the hand used to draw the bowstring.

**String notches**—grooves cut into the limbs of the bow that provide points of attachment for the bowstring.

**Take-down bow**—a type of bow that can be taken apart for storage or transporting.

**Target**—a general term used to refer to any object that the archer intends to hit with an arrow.

**Target face**—a replaceable piece of plastic or paper that can be attached to a target butt to provide an archer with an aiming point.

**Tip**—the very ends of the limbs on a bow.

**Vane**—plastic fletching.
Appendix B: Resources

Selected Archery Organizations

American Archery Council
604 Forest Avenue
Park Rapids, MN 56470

Bowhunters of America
1030 W. Central
Bismarck, ND 58501

Fred Bear Sports Club
4600 SW 41st Boulevard
Gainesville, FL 32601

International Bowhunting Organization of the U.S.
P.O. Box 1349
Madisonville, KY 42431

National Archery Association
1750 East Boulder St.
Colorado Springs, CO 80909

National Field Archery Association
31407 Outer Highway 10
Redlands, CA 92373

Professional Archers Association
26 Lakeview Drive
Stansbury, UT 84074

Professional Bowhunters Society
P.O. Box 5275
Charlotte, NC 28225

Selected Archery Magazines

Petersen’s Bowhunting
P.O. Box 54217
Boulder, CO 80322-4217

The U.S. Archer
7315 N. San Anna Drive
Tucson, AZ 85704
The 4-H Pledge

I pledge
My Head to clearer thinking,
My Heart to greater loyalty,
My Hands to larger service,
and My Health to better living,
for My Club, My Community,
My Country, and My World.