

\$4.00



4-H Archery Member Manual

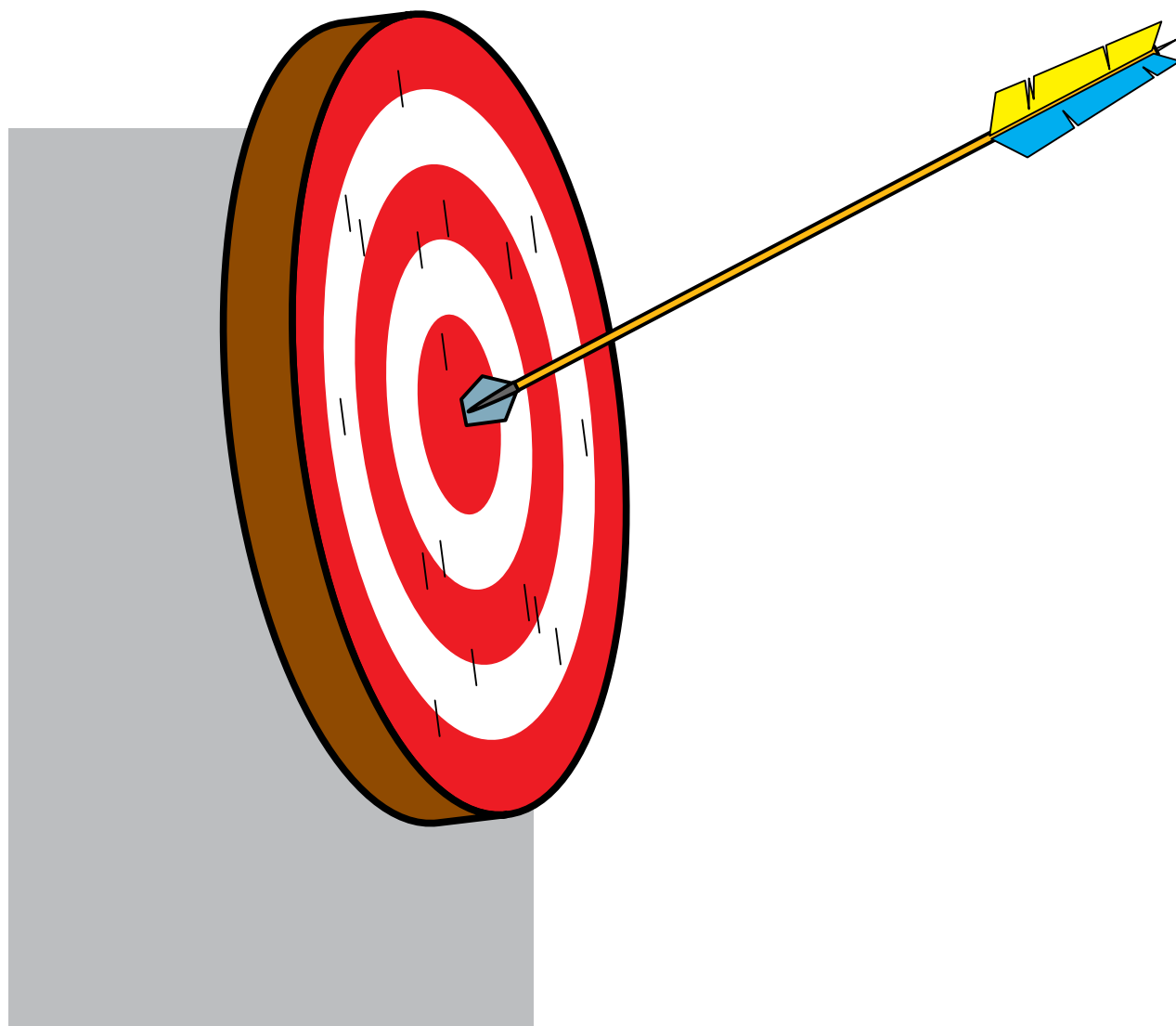


Table of Contents

Chapter 1. How It All Began..... 1

Chapter 2. The Bow and Arrow3

Chapter 3. Accessories and Safety Equipment7

Chapter 4. On the Range.....9

Chapter 5. Let’s Shoot! 11

Chapter 6. Common Faults and How to Fix Them..... 14

Glossary of Archery Terms 16

Serial archery drawings courtesy of Ohio State University Extension.

Revised by Debera L. Tracy Schreiber, 4-H youth development faculty, Wallowa County, Oregon State University.



Chapter 1

How It All Began

Introduction

Welcome to the great sport of archery! As you begin this project, you join the millions of people that have been using bows and arrows from necessity, for sport, and for fun!

The tradition of archery goes back at least 50,000 years. It was created by kings, queens, soldiers, and adventurers. The invention of the bow and arrow was one of the first attempts at harnessing energy. According to the *Encyclopedia Britannica*, the invention of the bow was one of the three most important cultural advances in history, equaled in importance only by the discovery of fire and the development of speech.

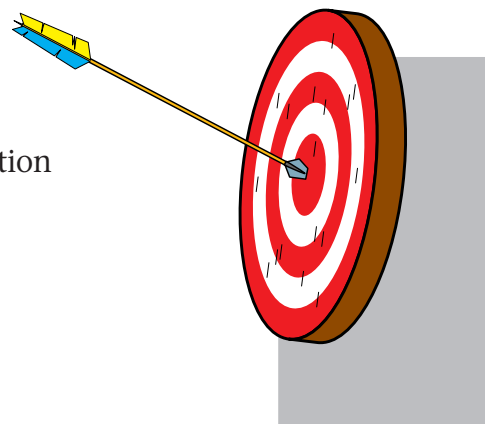
About 200 years ago, Native Americans living in Oregon began to use the bow and arrow. The two most commonly found types of arrow points from this period are called the Rosegate and the Desert Side-notched point. These points typically were made from a variety of cherts, jaspers, and obsidian. If you find these arrow points when exploring the outdoors, leave them where they are. Report your find to the public land manager, an archaeologist, or the local university.

This project is intended to give the beginning archer some basic skills. The more advanced archer can work through the project book to enhance skills.

Archery is fun, but it can be dangerous. Since people do hunt with bows and arrows, we know they can kill; so you must be careful! Treat the bow and arrow as a loaded firearm!

Things you can do

1. Read archery books and magazines to learn about the sport and its history. List the books and articles you read and discuss them with your leader.
2. Begin a scrapbook for your archery project. Include pictures of yourself learning to shoot. Also, include information about your equipment.



The Ten Commandments of Archery Safety

1. I will always treat my bow and arrows as a firearm and not point them at anything that I do not intend to kill.
2. I will not nock an arrow or draw a bow when a person is in front of me.
3. I will never release an arrow where I cannot see the entire flight of the arrow.
4. I will not shoot an arrow straight up.
5. I will not release a drawn bow without an arrow (dry fire).
6. I will not shoot an arrow that is too short for my draw or one that is damaged or too weak for my bow.
7. I will not shoot toward houses, highways, livestock, or where there are people.
8. I will not go forward to retrieve my arrows until all are through shooting.
9. When looking for an arrow beyond the target, I will set an arrow in the top of the target, or set my bow in front of the target to warn others that I am behind the target.
10. I will always be courteous to others, conserve wildlife, and preserve the natural beauty of my country.

Chapter 2

The Bow and Arrow

There are three types of bows:
(1) recurve, (2) longbow, and (3) compound.

Recurve bow

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

Longbow

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

Compound bow

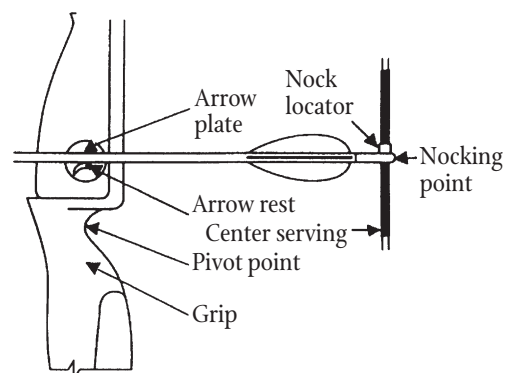
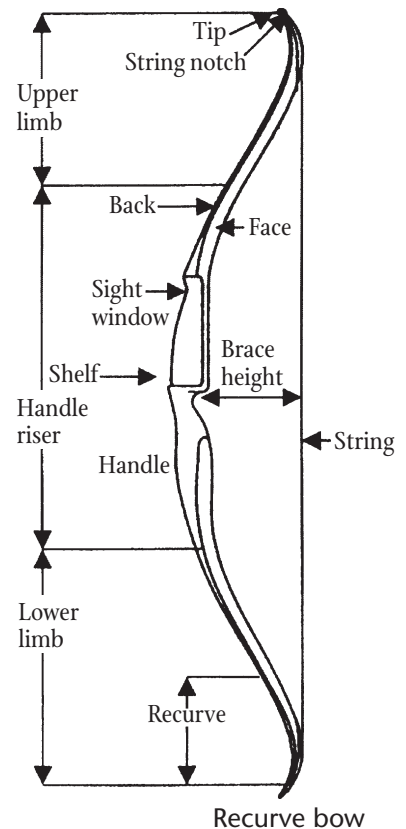
Compound bows use cables and pulleys to store and release energy. The cable and pulley system creates a “let-off” or bump about halfway back during the draw. This let-off is where the maximum force of the draw is felt. Once past the let-off, it becomes much easier to draw and hold back the string. This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

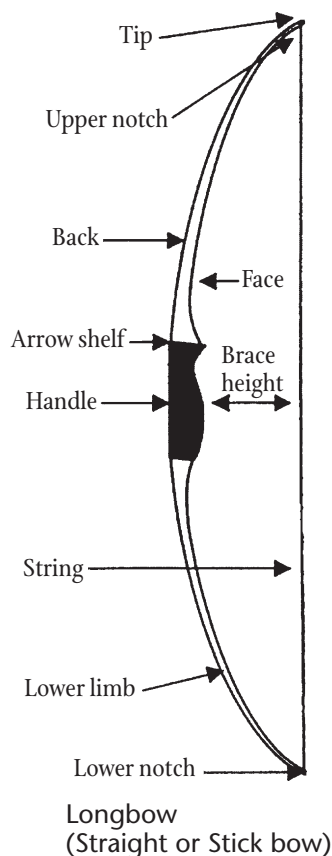
This type of a bow is **not** recommended for a beginning archer in this program.

Selecting a bow

If you select the right equipment, your experience will be more successful and more enjoyable. The first piece of equipment you will select is a bow.

The first thing you want to determine is whether you need a left-hand or a right-hand bow. There is more involved in this decision





than whether you are left or right handed. Just as most of us favor one hand over the other, we also favor one eye over the other. But, there is no correlation between our preferred hand and our preferred eye. Do the eye dominance test below to help you determine which eye you favor.

Bows are designed to be drawn a standard distance, called a **draw length**. With longbows and recurves, the farther back you pull the string, the greater force you exert. The amount of force (measured in pounds) it takes to draw a bowstring on a recurve or a longbow is called the **draw weight**. As a beginner, the most important consideration is the draw weight of the bow.

It is very important that you be able to draw the bow fully and hold it for several seconds without undue strain. An archer should be able to hold a full draw for a 7- to 10-second aiming period. Another way to test the draw weight is to pull the bowstring back several times. An archer should be able to pull the bow to full draw 10 or 12 times without noticing muscle fatigue.

A bow that is too heavy will prevent you from developing good shooting form. Start with one that is easy to draw and hold.

Bows are made from wood, fiberglass, and metal.

Weight

Guidelines:

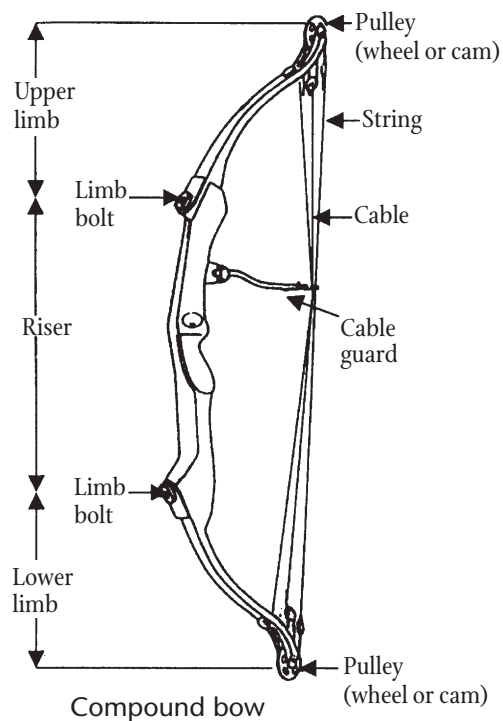
4th to 6th grades, recommended weight is 15 to 22 pounds

7th to 9th grades, recommended weight is 25 to 30 pounds

10th to 12th grades, recommended weight is 35 to 40 pounds

Eye dominance test

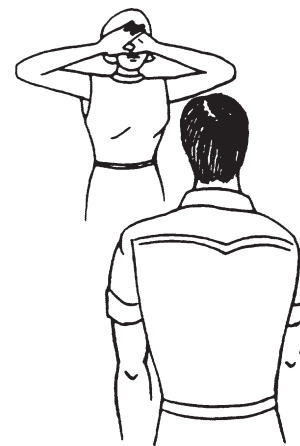
1. Recruit a partner to help you with this test (parent, friend, brother, or sister). Have your partner face you about 10 feet away, standing up.
2. Extend your arms straight out in front of you, with your hands flat and your palms facing down.
3. Place one thumb on top of the other.
4. Bend your wrists 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 eventually will achieve greater success by using your dominant eye and training your nondominant hand to manipulate the arrow and string.

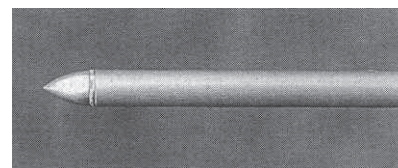
If you are right eye dominant, you will shoot right handed with the bow in the left hand and the string in the right hand. This will be the opposite for left handed archers. Just remember, the arrow is drawn to the dominant eye.



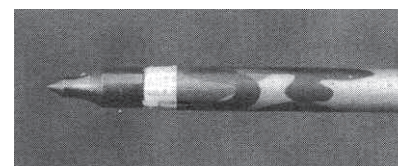
Arrows

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.

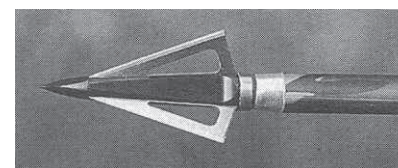
Arrows come with many different kinds of points, each designed for a different use. **Target points** usually are conical or bullet shaped, and are designed to cause minimal damage to foam or grass target mats. **Field points** may be bullet shaped or shaped somewhat like the point of a pencil. They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



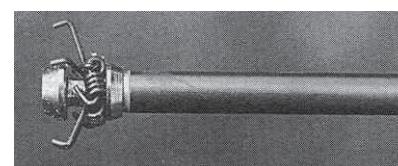
Target point



Field point



Broad head



Judo head

Selecting arrows

You may select arrows made of wood, fiberglass, or aluminum. Do not buy carbon arrows until you are more skilled as an archer.

Wooden arrows

Most wooden arrows are inexpensive. However, with the recent popularity of traditional archery, there are better quality, more expensive arrows available.

Wooden arrows may be less durable than arrows made from other materials. They may warp, splinter, and break with heavy use.



Fiberglass arrows

Fiberglass arrows are mainly for bow fishing. They are not recommended for hunting or target shooting because they are too heavy.

Aluminum arrows

Aluminum arrows are available in a range of sizes, prices, and durability. Most are durable with heavy use and can be restraightened. Replacing fletching, points, and nocks on aluminum arrows is easy.

Carbon arrows

Carbon arrows are for more experienced archers. They are very strong, durable, and lightweight. However, they are expensive.

Many compound bow hunters use carbon arrows. They also are becoming popular with dedicated target shooters who use traditional bows.

Arrow length

Once you have decided which material you want for your arrows, you must choose the right length. Arrows that are too long do not fly well, and arrows that are too short are dangerous. Arrows need to be an inch longer than the full draw of the archer. Archery shops often have a special bow for measuring accurately your proper arrow length.

It is extremely important to have a matched set of arrows. Do not mix and match.

Fletching

The guidance system for arrows is the **fletching**. Fletching is made of either feathers or plastic vanes. It is available in different sizes and colors.

Beginning archers often prefer feathers to vanes because feathers are more forgiving. They can fold or flatten as they pass the bow and arrow rest.

You might prefer plastic vanes if you will be shooting in wet weather or using more durable arrows. However, vanes cannot be shot off the shelf. They require an arrow rest that folds out of the way or does not touch the vanes as they pass.

Things to do

1. Visit an archery shop to see the different types of bows and arrows available.
2. Give a presentation on different types of arrows and their uses.
3. Complete the eye dominance test to determine your dominant eye.

Chapter 3

Accessories and Safety Equipment

Armguard, finger tab, and quiver

The beginning archer needs some accessories to have a successful and positive experience. The most important accessories include an **armguard**, a **finger tab** or glove, and a **quiver**.

Always wear an **armguard** and finger protection when shooting your bow, to protect yourself from injury. Wear the armguard inside your bow arm (the arm with which you hold your bow) between your wrist and your elbow. This keeps clothing out of the path of the string and reduces the chance of injury should the string hit your arm.

Beginning archers should wear a **finger tab** on their string hand (the hand that draws the string). The tab protects the middle three fingers, which hook onto the string as you pull it back. More experienced archers may switch to a **shooting glove** or a **mechanical release**.

The **quiver** holds the arrows. It is a helpful piece of equipment for any archer. Different styles of quivers complement different styles of shooting. **Belt quivers** attach to your belt on the string side of your body and 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.

Other accessories

As you gain skill, you might want to try some other accessories.

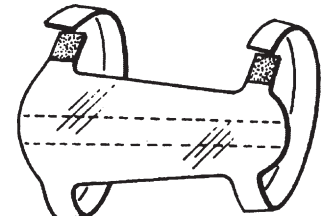
A **sling** worn on the wrist or fingers helps you keep a light grip on the bow.

A **clothing shield** is worn on your chest. It helps keep your shirt or jacket away from a fully drawn string.

A **kisser button** attaches to the string at the point where it touches 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.

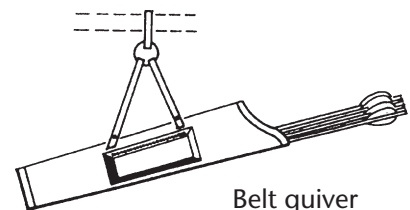
Advanced shooters may install a **clicker** inside the sight window to signal when they have reached full draw.



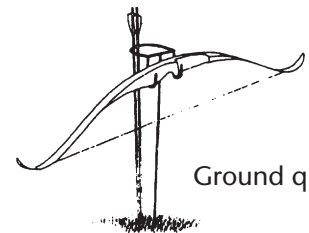
Armguard



Finger tab



Belt quiver



Ground quiver



Finger sling



Clothing shield



Things to do

1. Prepare a presentation to give at a club meeting or fair.
2. Attend an archery tournament.
3. Make a list of archery equipment you are using for this project.
4. Mount examples of smaller archery accessories (such as arrow points and finger tabs). Label each item and exhibit this at the fair.



Chapter 4

On the Range

Safety first

The place that you will shoot your bow and arrow is called a **range**. The most important aspect of an archery range is safety. Do not set up targets in front of buildings, sidewalks, or other areas where people might pass. A hillside bank is ideal, but not necessary.

Remove brush and obstacles from behind targets as much as possible. This helps avoid lost and broken arrows. It also prevents arrows from deflecting, so you can find them more easily.

You might need to find out if your city has an ordinance about shooting within the city limits.

The shooting range should be defined by clear perimeter lines. These lines can be made of tape, lime, or rope. If you are shooting indoors, make sure that there are no doors that could allow people to walk into your range. Post warning signs around the perimeter of the range to help ensure that spectators and nonparticipants stay out of the area.

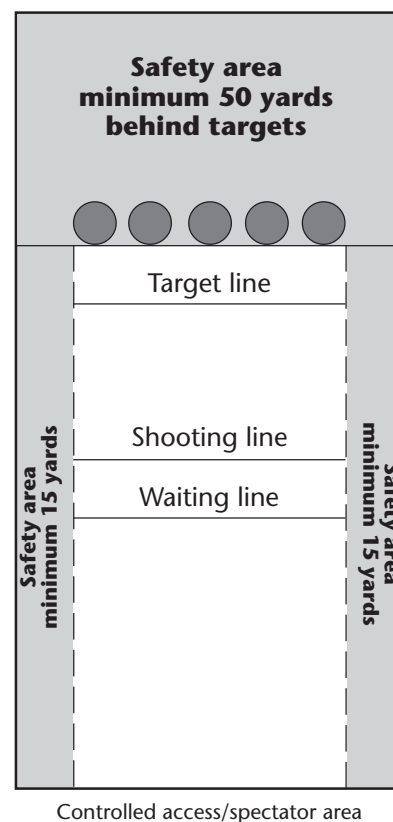
Parts of a range

A range should have a shooting line, a waiting line, and a target line. These can be made with tape or lime.

The **shooting line** is the line that the shooter straddles to fire his or her arrows. With beginning archers, this line needs to be close enough to the target so that the archer will be successful and hit the target every time.

The **waiting line** should be 3 yards behind the shooting line. Shooters are required to stand behind the waiting line until it is safe to retrieve their arrows, and until the range commander allows them to advance to the target line. Waiting behind the waiting line gives all other shooters an opportunity to concentrate fully on each shot.

When it is time to retrieve arrows, and the range commander has given the signal, you may approach the **target line**. The target line should be 3 yards in front of the target. This line acts as a “speed bump” and slows the people walking forward to pull their arrows so they won’t run into the arrows sticking out of the targets. It also keeps the people that are waiting to pull their arrows a safe distance from the targets.



As you begin to shoot, you will want to practice shooting into **target butts** with target faces attached. Make sure your target is attached securely to the butt. Target butts need to be approximately 4 feet square. This size allows more arrows to hit the targets. Targets are made of foam or natural materials such as straw bales, tightly wound grass, or excelsior bales.

Begin shooting from a distance of approximately 10 yards. As your skills improve, increase this distance in 5-yard increments.

You will shoot with your club at a range, but you may want to set up a target at home to practice. If you are going to do this, make sure that you have plenty of room.

Things to do

1. Visit an archery range or pro shop. Notice what the archery butts are made of, and at what distances their shooting lines are set up.
2. Draw a diagram of your home archery range.



Chapter 5

Let's Shoot!

Nine steps of shooting

Shooting can be divided into nine steps. The key to becoming an accurate archer is being consistent every time 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

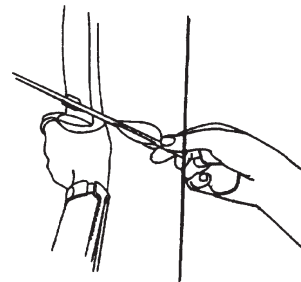
1. *Stance*

Place one foot on each side of the shooting line. Find a comfortable, balanced stance with your feet shoulder width apart. Stand straight and tall, with your head up and your shoulders relaxed. Archers shooting from a wheelchair should put one pair of wheels on each side of the shooting line.



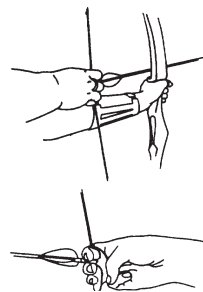
2. *Nock*

Place the arrow on the arrow rest, holding the arrow close to the nock. Keep the index fletching (the different colored feather or vane) away from the bow. Snap the nock onto the bowstring under the nock locator.



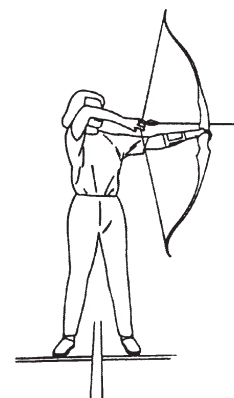
3. Set

Set your bow hand on the grip using only the web and the meaty part of your thumb. Your bow hand should stay relaxed through the whole shot. Set the first groove of your first three fingers around the bowstring, creating a **hook**. Keep the back of the string hand relaxed.



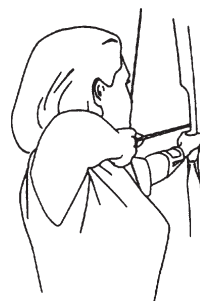
4. Pre-draw

Raise your bow arm towards the target, without raising your shoulder. Look at the target and line up the bowstring with the center of the bow. Make sure the elbow on your bow arm is out of the way. The elbow of your drawing arm should be near the level of your nose.



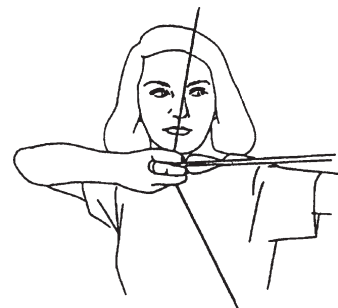
5. Draw

Draw the bow back to full draw. Your elbow should be directly behind the arrow. Continue looking at the target, and keep the string lined up with the center of the bow as you draw.



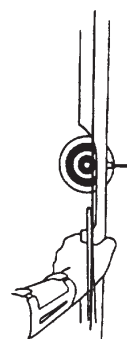
6. Anchor

Draw the string to the front of your chin, placing the knuckle of your index finger directly under the side of your jaw. Make sure that the string is lined up with the center of your nose.



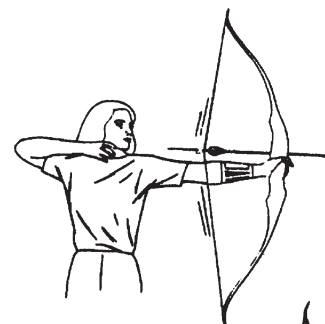
7. Aim

Focus your eyes on the center of the target. Keep the string lined up with the center of the bow. Continue the gradual draw.



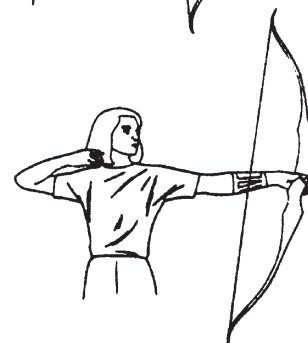
8. Release

Simply release all the tension in your fingers and drawing hand all at once. Continue extending the bow arm toward the target as you release. Continue focusing on the target.



9. Follow through

The drawing hand continues back beside the neck with fingers relaxed, ending up near the shoulder. The bow arm continues extension toward the target. Continue focusing on the target. Maintain your follow through until the arrow has hit the target.

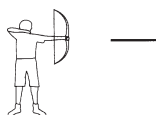


Retrieving arrows

When the range commander signals, archers may approach the target line. One archer per target may go forward to retrieve her or his arrows.

Walk forward slowly, watching for arrows that fell short or bounced out of the target. Retrieve these arrows as you come to them.

Be very careful when pulling the arrows. Be sure no one is standing behind you. Stand to the side of the target, and place one hand on the target face next to the arrow. Press the target against the butt and grab the arrow as close to the target as possible (touching the hand on the target face). Pull the arrow straight out. Place this arrow in the quiver before you pull out the next.



Chapter 6

Common Faults and How to Fix Them

It can be difficult to determine why arrows are landing where they are. Watching where arrows land on the target face can help you identify shooting form errors. Archers with good and consistent shooting form should shoot their arrows in a **group**. A group is when the arrows are all close together, even if the group is not in the center.

Here are some arrow patterns and common errors that cause the patterns.

Pattern	Possible reasons	How to correct
High arrows	Arrow nocked low.	• Check the nocking point frequently. • Be sure the nocking point is perpendicular to the arrow shelf so that the arrow, when nocked, is perpendicular to the string.
	Pulling drawstring back too far.	• Maintain a consistent anchor point.
	Raising the bow arm during the release.	• Concentrate on form. • Look right down the arrow at the target.
	Pulling the hand down during release.	• Maintain follow through until the arrow hits the target. • Lightly grip the bow, allowing it to rock forward naturally when you release it.
Low arrows	Dropping the bow arm during release.	• Maintain follow through until the arrow hits the target. • Lightly grip the bow, allowing it to rock forward naturally when you release it. • Keep the bow arm at the same height as at full draw.
	Collapsing. (Bow arm moves to the right, string hand moves out or forward.)	• Continue pulling. • Maintain a consistent anchor point.
	Creeping. (Reversing the drawing motion, or allowing the arrow to move forward before release.)	• Continue pulling through with one motion all the way through the release.
	Leaning towards the target.	• Stand up straight.
	Arrow placed on shelf instead of rest.	• Place arrow on the rest.

Pattern	Possible reasons	How to correct
Left and right arrow patterns	Canting the bow. (Tilting the bow to the right or to the left.)	• Keep the bow straight up and down.
	Peeking. (Pulling your face around the bow to get a better look at the target when shooting.)	• Focus on the target. • Maintain your follow through until the arrow hits the target.
	Gripping the bow too tightly.	• Keep your bow hand relaxed throughout the shot. • Place only your thumb and forefinger around the bow.
Left arrows (Right for left-handed shooters)	Plucking. (Pulling the release hand away from the face during release.)	• Continue to draw the bowstring as you relax your fingers. • Keep your hand close to your face.
	Flinching with the left arm.	• Wear an armguard to remove the fear of string slap.
Extremely left arrows (Right for left-handed shooters)	Aiming with the left eye for a right eye shooter or vice-versa.	• Perform the eye dominance test and trust it. • Put a piece of scotch tape over one lens of a pair of shooting glasses to make you use your dominant eye.
Low left arrows (Low right for left-handed shooters)	String hitting the chest or bow arm, or being caught by loose clothing.	• Open your stance slightly. • Wear an armguard. • Dress appropriately, with no loose clothing.

These faults are common and may be corrected easily. Remember that the most important factor in successful shooting is good, consistent form. Practice your form and follow through, and you will have won more than half of the battle.



Glossary of Archery Terms

aim: Any method used to point the arrow in the direction you want it to go. When using sights, to superimpose the sighting device over the spot you wish to hit with your arrow.

anchor: Consistent placement of the drawing hand to a position on the face, mouth, or jaw when the bow is drawn fully.

anchor point: The specific point that your drawing hand touches when the bow is drawn fully.

archer: One who shoots a bow.

armguard: A piece of stiff material, usually leather, used to protect the bow arm from the slap of the bowstring or broken arrow upon release. It is worn on the inside of the forearm of the bow arm.

arrow: A projectile shot from a bow.

arrowhead: The tip of an arrow.

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

arrow rest: The horizontal projection on the bow that supports the arrow.

back: The side of the bow away from the bowstring.

barbed arrow: An arrow designed for fishing, having barbs so it will not come out.

barebow: A style of shooting without a bow sight.

belly or face: The surface of the bow facing the string and toward the archer when shooting.

belt quiver: An arrow container that is worn on the archer's belt.

blunt tip: An arrow point usually made of rubber and used in some archery activities.

bow: A device made of a piece of flexible material with a string connecting the two ends, used to propel an arrow.

bow arm or bow hand: The hand and arm that holds the bow.

bow sight: A device placed on the bow to aid the archer in aiming.

bow square: A T-shaped device used to measure brace height and for placing nock locators.

bowstring: The string that connects the two ends of the bow and propels the arrow.

bow stringer: A device used to string a bow.

boyer: A person that makes bows.

brace height: The distance from the pivot point to the string when a bow is strung. (Also called string height; once called the fistmele.)

broadhead: A very sharp arrow point, usually with two or more cutting edges, used for hunting.

bull's eye: The center of the target.

butt: Any backstop to which a target face is attached.

cant: To tilt the bow left or right while at full draw.

cast: The ability of a bow to propel an arrow a given distance.

center serving: The material in the center of the bowstring where the arrow is nocked. Protects the string from wear.

clicker: A small strip of metal, mounted on the sight window in front of the arrow rest, that gives a precise indication of when full draw is attained by snapping off the point of the arrow with an audible click.

cock feather: The feather that is at right angles to the bow during the draw; usually the odd-colored feather (also called "index feather.")

composite bow: A bow made of more than one material.

compound bow: A hand-held, hand-drawn bow that uses a pair of cables and wheels to store more energy.

creep: To allow the arrow to move slowly forward before release.

crest: The colored bands around the shaft of the arrow which aid in its identification.

dominant eye: The eye with which one naturally aims.

draw: To pull the bowstring back. Also, the distance the bowstring is pulled back.

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 weight, measured in pounds, used to bring the bow to full draw.

drawing arm or hand: The arm that draws the string.

end: A set number of arrows that are shot before going to the target to score and retrieve them.

face or belly: The side of the bow closest to the bowstring.

finger tab: A flat piece of smooth material which protects the fingers of the drawing hand.

finger sling: A small strap that attaches to the thumb and index finger of the bow hand.

fistmele: The distance between the handle and string when the bow is strung.

fletching, fletch: The feathers, plastic vanes, or other devices attached to the arrow shaft which stabilize the flight of the arrow. Also, to attach these devices to the arrow.

flu-flu: An arrow with large untrimmed feathers which restrict the distance it will travel; used for shooting aerial targets.

follow through: Maintaining the motion of the upper body muscles after releasing the string.

full draw: The position of the archer when the bowstring has been drawn to the anchor point.

grip: The portion of the bow that is held by the bow hand.

ground quiver: A device that is stuck into the ground or sits on the ground to hold arrows and/or a bow.

group: To shoot arrows in a pattern. Or, the pattern of the arrows in the target.

index feather: The feather that is at right angles to the bow during the draw; usually, the odd-colored feather (also called "cock feather.")

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: An indicator or protrusion placed on the bowstring so it touches the lips while the archer is at full draw. Used as an aid to reinforce the anchor position.

laminated bow: A bow made of several layers of material glued together, usually two layers of fiberglass and a hardwood core.

let down: Returning from full draw to the undrawn position with control and not 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: Upper or lower part of the bow that bends when the string is drawn back; the part of the bow where the energy is stored.

longbow: A style of bow that is straight when unstrung. Also known as a straight or stick bow.

mat (butt): The circular disc of grass or plastic to which the target face is attached.

nock: To place the arrow on the string. Also, the attachment to the rear end of an arrow which is placed on the bowstring and holds the arrow on the string.

nock locator (point): The mark or device that indicates where the arrow is to be placed on the string.

notch: The groove or ridge in the tips of the bow limbs that holds the bowstring when the bow is strung.

pivot point: The point on the face side of the bow handle which is the deepest part of the bow grip, approximately the center of the riser.

quiver: A device used to hold arrows.

range: A place set up for shooting.

recurve bow: A bow with limbs that bend away from the archer when the bow is held in the shooting position.

release: The act of relaxing the fingers that are holding the bowstring at full draw.

riser: The middle section of the bow that divides the upper and lower limbs.

round: A prescribed number of arrows, ends, and games, shot at prescribed distances.

serving: The wrapping of material around the loops and center of the bowstring to protect it from wear.

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.

shooting line: The common line straddled by all archers when shooting.

sight window: The cut-out section of the bow above the handle that allows a clear view of the vertical movement of the sight.

spine: The stiffness or amount an arrow bends, determined by hanging a 2-pound weight from the center of the arrow and measuring the bend.

stabilizer: A rod attached to the handle riser that absorbs the vibrations of the bow when the string is released. Usually, there is a weight on the end of the rod.

string hand: The hand that draws the bowstring.

tackle: An inclusive term for archery equipment.

take-down bow: A type of bow that can be taken apart for storage or transporting.

target archery: Shooting arrows at fixed distances at targets, usually in open areas on level ground or indoors.

target face: The front cover of a target, painted with regulation rings or designs.

tip: The very ends of the limbs of a bow.

torque: An undesirable twisting of the bow by the bow hand; or, of the string by the string hand.

toxophilite: A lover of the bow; an archer.

trajectory: The path of an arrow in flight.

tune: To adjust the variables in the bow and arrow system to achieve the best arrow flight and arrow groups.

vane: Any fletching made of a material other than feathers, usually plastic.

windage: The left-right adjustment of the bow sight.



Acknowledgments and Resources

- The ABCs of Archery*. 1993. Archery Manufacturers Organization, Gainesville, Florida.
- Basic Archery*, 4-H 631. 1995. Ohio State University Extension, Columbus, Ohio.
- 4-H Archery*, 4-H 361. Reprinted 1995. Oregon State University Extension Service, Corvallis, Oregon.
- 4-H Shooting Sports Guide*. 1992. National Shooting Sports Development Committee, Ronald A. Howard, Jr., Purdue University, W. Lafayette, Indiana
- National Archery Association Level 1 Basic Instructors Course, Second Edition*. 1995. National Archery Association of the United States, Colorado Springs, Colorado.
- National Archery Association Level 2 Basic Instructors Course, First Edition*. 1994. National Archery Association of the United States, Colorado Springs, Colorado.
- On Target for Fun* (videotape). 1990. Produced by Athletic Institute, North Palm Beach, Florida. Presented by Archery Manufacturers Organization, Gainesville, Florida.
- Oregon 4-H Archery Leaders Guide*, 4-H 361L. Reprinted 1997. Oregon State University Extension Service, Corvallis, Oregon.

© 2002 Oregon State University. Extension work is a cooperative program of Oregon State University, the U.S. Department of Agriculture, and Oregon counties. Oregon State University Extension Service offers educational programs, activities, and materials without discrimination based on age, color, disability, gender identity or expression, marital status, national origin, race, religion, sex, sexual orientation, or veteran's status. Oregon State University Extension Service is an Equal Opportunity Employer.

Revised July 2002. Reprinted March 2009.

