

BREVARD COUNTY 4-H ARCHERY PROJECT



UNIVERSITY OF
FLORIDA

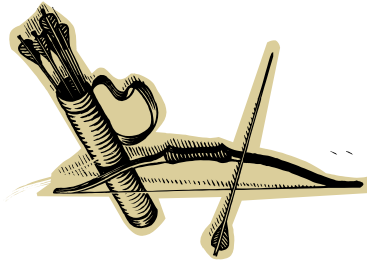
EXTENSION

Institute of Food and Agricultural Sciences



Adapted from University of Washington 4-H Archery Project by Scott Gore Brevard Co 4-H Volunteer and Renee' L. Gore Brevard 4-H Agent August, 2004

BREVARD COUNTY 4-H ARCHERY



HISTORY OF ARCHERY

The bow and arrow have been used as a weapon for hunting for at least 50,000 years. Flint arrowheads used years ago can still be found in some parts of Florida. The bow also protected persons from their enemies, as well as secured their food. Early military wars were won by expert archers. Thus, archery became a symbol of power and was included in the seal of the United States. It also became a symbol of romance through tales of Robin Hood and Cupid.

Since the National Archery Association began in 1879, archery has become a popular sport. Millions of people now enjoy archery as a sport. We hope you will, too.

What Can You Learn through this Project?

1. To select and care for a suitable bow and arrows.
2. To shoot a bow and arrow accurately and safely.
3. About birds and animals and wildlife conservation.
4. About shooting regulations.
5. To enjoy archery as a sport.

What Is Expected of 4-H Members in this Project?

1. Be a member of a club; archery should not be taken as an individual project.
2. Help plan a yearly club program which includes individual goals for each member.
3. Attend club meetings regularly.
4. Learn and practice archery safety.
5. Participate in some field trips and/or archery matches.
6. Give a presentation on some phase of archery.
7. Complete a yearly project record and keep Permanent Record up to date.
8. Participate in the Archery Advancement Program.
9. Be an active, cooperative member.

(Adapted from the University of Washington 4-H Archery project.)

THE TEN COMMANDMENTS OF ARCHERY plus Two

1. I will always remember that my bow is a deadly weapon and will do nothing that might endanger others.
2. I will not nock my arrow (put an arrow on the string of the bow) or draw a bow when a person is in front of me, and I will always shoot toward a target. I will not try to shoot anything that a person is holding.
3. I will never “dry” fire a bow without an arrow (pull back on a bow string with no arrow in place).
4. I will never shoot an arrow straight up.
5. I will never release an arrow where I cannot see the entire flight of the arrow.
6. I will not use damaged equipment. I will check arrows, before shooting, for loose feathers, points, and nocks, and repair before using. I will check for frayed strings and inspect arrows and bows for cracks, and will destroy them if damaged in this way.
7. I will never shoot an arrow that is too short for my draw.
8. I will not shoot at a target that is too thin to stop my arrow.
9. When shooting with another person, I will not go forward to retrieve my arrows until an “all clear” sign has been given. When looking for arrows beyond the target, I will set my bow in front of the target to warn others that I am behind the target.
10. I will always wear proper clothing for safe shooting and will always be courteous toward others.
11. I will strive toward conserving wildlife and preserving the beauty of my country.
12. I will always listen to the Range Master and follow his or her commands.

BOW HUNTER’S CREED

I will:

- Keep a clean and safe camp.
- Put out my campfire.
- Be a safe and cautious hunter.
- Only shoot at game within accurate range.
- Help the novice become a better hunter and sportsman.
- Cooperate with game and forest service officials.
- Abide by and help enforce hunting regulations.
- Use good hunting equipment and keep my broadheads razor-sharp.

- Cooperate with landowners by closing gates and being considerate of their property, and always ask for permission to enter.

Equipment Needed for this Project:

Bows

Bows are made of wood, fiberglass, and metal (aluminum or steel).

Weight Guideline

4–6 grades, recommended weight is 15–22 pound bow

7–9 grades, recommended weight is 25–30 pound bow

10–12 grades, recommended weight is 35–40 pound bow (or greater)

An archer should be able to hold a full draw for a 7–10 second aiming period.

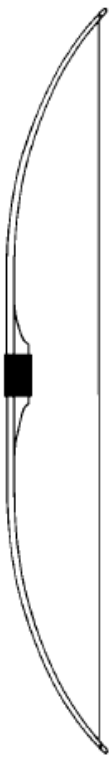
Kinds

- *Straight limb or long bow*—simplest bow made, no gimmicks attached. It has a smooth pull and flat trajectory. Some archers feel it offers steadier, more accurate shooting.

- *Recurved*—this gives a smoother draw and added speed to the arrow.

- *Compound*—(2- and 4-wheel) these bows are the fastest and easiest to hold at full draw.

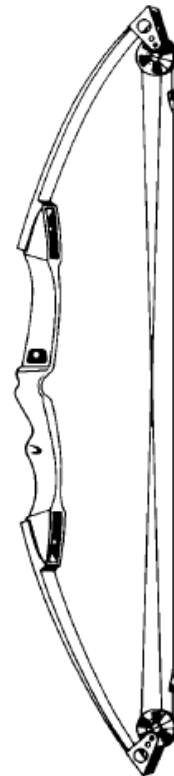
It “lets off” in draw weight 20% to 85% from its “peak” weight to its holding weight, so one can have 60 pounds of power, but is actually only holding close to 30 pounds, depending on the percentage.



Straight



Recurved



Compound

Target Arrows

Materials are wood, fiberglass, aluminum, and carbon.

Beginners usually begin with wood. Cedar arrows must be of suitable length for your draw. At a full draw, the point of the arrow, the complete point, should extend just beyond the back of the bow, or one inch beyond the arrow rest.

How To Measure Length

There are three methods of measuring length:

- Stretch both hands out in front of your body with palms together. Measure from the tip of fingers to your chest. This is the length of arrows needed.
- Stretch both arms out at shoulder height. Measure the total distance between finger tips. If spread measurement is 57"–59" arrow length should be 22"–23". If 60"–62", arrow length is 23"–24". If 63"–65" arrow length is 24"–25", etc.
- The best way to determine correct arrow length is to draw a special measuring arrow that has been marked every inch, like a ruler. When you are at full draw, your correct arrow length is read from the marked arrow, where it crosses the back of your bow, or one inch greater than the distance of the arrow rest.

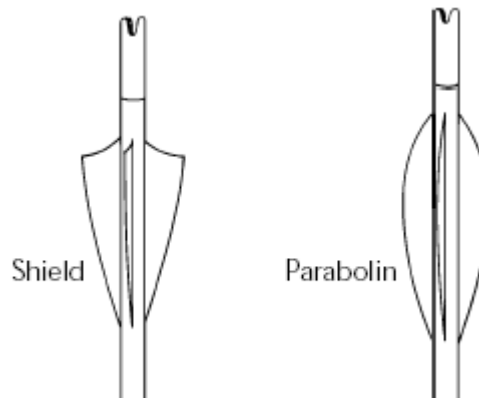
You will need a matched set of arrows (arrows identical in length and spine to each other) for tournament shooting.

Parts of the Arrow



Feather Shapes

The feathers help determine the stability and noise of the arrow while in flight.



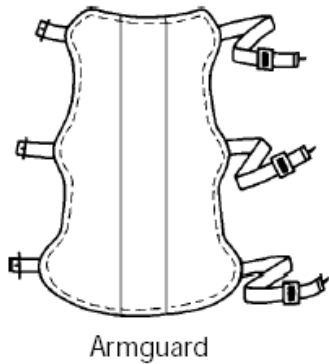
The two most used types are:

Safety Equipment

Armguard to protect your forearm from the bowstring and a possible broken arrow. It also provides a smooth surface for the string to strike, preventing the improper flight of the arrow.

Finger Guard (tab) or Shooting Glove. These protect the three “shooting” fingers and provide for a smooth release.

Quiver used to hold or carry the arrows. Some common types are ground, pocket, hip, and belt.



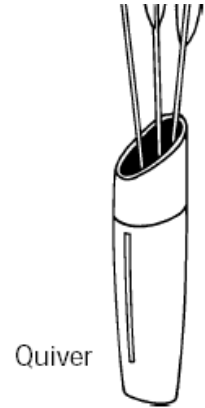
Armguard



Finger Guard or Tab



Shooting Glove



Quiver

Shooting the Bow

Refer to the *NRA Bow Hunting Handbook*, *Boy Scouts Of America Merit Badge Series*, or *Oregon 4-H Archery Leader Guide*, for instructions on shooting and care of your bow. Each member and leader should have a copy of one of these handbooks.

DEMONSTRATIONS

A demonstration is showing and telling how to do something. You will learn many things in your 4-H Archery Project that you can share with others through different kinds of demonstrations. Demonstrations may be given individually or with a teammate. Here are some good ideas for demonstrations:

- How to string a bow.
- How to stand when shooting.
- How to nock, draw, and release an arrow.
- How to aim with a bow and arrow.
- How to draw arrows from a target.
- How to score an archery match.
- How to select a bow.
- How to select arrows.
- How to store, carry, and care for a bow and arrows.

EXHIBITS AND DISPLAYS

Your club may be invited to prepare a window display or an exhibit for a 4-H Achievement program or your community or county fair. You might include posters showing the history of archery, safety, shooting techniques, wildlife conservation, pictures, and equipment. An archery display should visually explain some technique or process related to archery, such as:

- Why the weight and spine of an arrow must be matched to the weight and cast of the bow.
- The use of aiming points in relation to trajectory.
- The history of archery and its importance to the development of civilization.
- How to fletch an arrow.
- How to determine the length of arrows needed by an archer.
- How to select a bow.
- Archery games.

4-H ARCHERY ADVANCEMENT PROGRAM

The 4-H Archery Advancement program will:

- Help you learn more about archery.
- Help you improve your shooting skill and score.
- Give you credit for extra work done.
- Allow you to advance at your own pace.

Your progress in the Advancement Program will become a part of your 4-H record. As you complete each requirement, fill in the date and have your leader initial it. When you have completed the required jobs for each step, you will receive a 4-H Archery Advancement certificate. Study each requirement carefully and do your work well. Good luck!

4-H Junior Bowman

Step 1

1. Draw a diagram of an arrow and label the following parts: point shaft, crest, fletching, cock feather, and nock.

**Date
Passed**

**Approved
by**

2. Draw a diagram of a strung bow and label the following parts: tip, nock, back, face or belly, handle, arrow rest, bowstring, serving and nocking point.

3. Define, describe, and/or explain the purpose or use of these archery terms: armguard, cock feathers, crest, draw, nock (arrow nock, bow nock, and to nock an arrow), overbowed, overdraw, petticoat, quiver.

- 4. Learn and practice the "Ten Commandments of Archery Safety." _____
- 5. Demonstrate (show and tell) how to string a bow. _____
- 6. Demonstrate how to nock, draw, and release an arrow safely. _____
- 7. Shoot 30 arrows at 9 meters. and record your score. Use 60-cm 10-ring target. Score at least 130 Bare Bow (B.B.), or 150 Free Style (F.S.). _____

_____ has completed all requirements and is approved for advancement to the rank of 4-H Junior Bowman.

Approved by _____

Date _____

4-H Bowman

Step 2

- 1. Be a qualified 4-H Junior Bowman and continue to observe the "Ten Commandments of Archery Safety." _____
- 2. Define, describe, and/or explain the purpose or use of the following archery terms: anchoring, arrow rest, barebow, blunt, cast, creep, end, field arrow, freestyle, recurved bow, compound bow, spine, stance, vane, weight (bow weight, arrow weight). _____
- 3. Read a book, story, or article about archery, bow hunting, or wildlife, and report to your club. Tell what happened in the story and what you learned about archery, sportsmanship, and wildlife. _____
- 4. Explain and demonstrate "bow sighting" or "point of aim" sighting. _____
- 5. Explain the proper care and storage of the bow, bow string, and arrows. _____
- 6. Shoot 30 arrows at 9 meters. and record your score. Use 60-cm 10-ring target. Score at least 180 Bare Bow (B.B.), or 200 Free Style (F.S.). _____
- 7. Complete one elective from each group of 4-H Archery Electives, pages 10-13. _____

_____ has completed all requirements and is approved for advancement to the rank of 4-H Bowman.

Approved by _____

Date _____

4-H Junior Archer

Step 3

**Date
Passed**

**Approved
by**

1. Be a qualified 4-H Bowman and continue to observe the "Ten Commandments of Archery Safety."
2. Define, describe, and/or explain the purpose or use of these archery terms: bow sight, broad head, clout shooting, flight arrow, flight shooting, overstrung and understrung, range finder, trajectory.
3. Explain the methods of shooting and why they are important. Demonstrate all the steps.
4. Learn the advantages and disadvantages of the long, reflex, recurved, and compound bows.
5. Explain how a compound bow functions.
6. Shoot 30 arrows at 18 meters. and record your score. Use 60-cm 10-ring target. Score at least 130 Bare Bow (B.B.), or 150 Free Style (F.S.).
7. Do two electives from each group of 4-H Archery Electives on pages 10–13.

_____	_____
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____

_____ has completed all requirements and is approved for advancement to the rank of 4-H Junior Archer.

Approved by _____

Date _____

4-H Archer

Step 4A

1. Have completed the three previous steps.
2. Continue to observe all safety rules.
3. Shoot and list scores for the following tournament rounds. Each round must be shot without a break, except for a brief rest if needed.

_____	_____
_____	_____
_____	_____

<i>Choose B.B. or F.S.</i>	BARE BOW <i>Your Score</i>	FREE STYLE <i>Your Score</i>
Junior Easton Round (NAA)(600)	_____	_____
Freeman Round (NFAA)(300)	_____	_____
Field Round (FITA)(780)	_____	_____
Indoor Round (NAA)(300)	_____	_____
Junior 900 Round (NAA)(900)	_____	_____

_____	_____
_____	_____
_____	_____
_____	_____
_____	_____

4. Help plan, conduct, and score an archery match between two clubs or teams or a tournament for individuals.
5. Do two more electives from each group of 4-H Archery Electives on

_____	_____
-------	-------

pages 10–13.

6. Shoot 30 arrows at 18 meters and record your score. Use 60-cm 10-ring target. Score at least 180 Bare Bow (B.B.), or 200 Free Style (F.S.).

Goal for Master Archer—Shoot 30 arrows at 18 meters, and record your score. Use 60-cm 10-ring target. Score at least 230 Bare Bow (B.B), or 250 Free Style (F.S.).

Your Score _____

_____ has completed all requirements and is approved for advancement to the rank of 4-H Archer.

Approved by _____

Date _____

4-H Bow Hunter

Step 4B

1. Be a qualified 4-H Archer and continue to observe all safety rules.

2. Learn the state regulations for hunting with a bow and arrow (available from Florida State Game Commission).

3. Read about and/or observe some game animal, bird, or fish and report to your club.

4. Go bow hunting for game or unprotected animal, bird, or fish with your bow and arrow.

5. Complete two more electives from each group of 4-H Archery electives on pages 10–13.

6. Learn and practice the “Bow Hunter’s Creed.”

7. Learn what special precautions and preparations a bow hunter makes concerning dress, equipment, stalking game, and the procedure after hitting an animal.

8. Know vital target areas for killing animals with an arrow.

_____ has completed all requirements and is approved for advancement to the rank of 4-H Bow Hunter.

Approved by _____

Date _____

Archery Electives

Archery

**Date
Passed**

**Approved
by**

- | | | |
|---|-------|-------|
| 1. Read a story, article, or book on archery and report to your club.
(This elective may be repeated by reading different articles.) | _____ | _____ |
| 2. Organize and lead an archery game. | _____ | _____ |
| 3. Make a set of six arrows. You may purchase parts. They should be suitable
for your bow and draw. | _____ | _____ |
| 4. Make a bow string. | _____ | _____ |
| 5. Demonstrate how to adjust the brace height or fistmele of a bow. | _____ | _____ |
| 6. Make a finger tab. | _____ | _____ |
| 7. Make a quiver. | _____ | _____ |
| 8. Make a butt or mat. | _____ | _____ |
| 9. Make an archery target. | _____ | _____ |
| 10. Set up an archery range at your home. | _____ | _____ |
| 11. Attach a bow sight to your bow and learn how to use it. | _____ | _____ |
| 12. Practice clout shooting until you are reasonably accurate. | _____ | _____ |
| 13. Participate in a field archery match or tournament. | _____ | _____ |
| 14. Earn the privilege of representing your county at the State 4-H Archery
Contest at the State Fair. | _____ | _____ |

Design your own archery elective(s):

Archery Electives

Outdoorsmanship

**Date
Passed**

**Approved
by**

1. Participate in a community, roadside, campground, or stream bank cleanup. (This elective may be repeated.)

2. Make a map that will show someone else how to get to one of your favorite places.

3. Complete a five-mile hike.

4. Complete a ten-mile hike.

5. Demonstrate how to determine directions without a compass.

6. Build a safe campfire and put it out.

7. Make an overnight hike and camp where you must carry everything you need for at least one mile.

8. Cook a meal over a campfire for yourself and one other person.

9. Go hunting with a parent or friends and make a report about wildlife you saw.

10. Volunteer to be a 4-H camp counselor.

11. Give a demonstration on how to pack a backpack for an overnigher.

12. Give a talk about safety and survival in the woods.

Design your own elective(s) on outdoorsmanship:

Archery Electives

Wildlife Study and Conservation

**Date
Passed**

**Approved
by**

1. Read about and/or observe and report on some wild animal, bird, or fish.
(This elective may be repeated.)

2. Find and identify the tracks of five wild animals.

3. Observe and identify ten birds.

4. Find and identify ten native forest trees.

5. Find and identify ten wildflowers or other forest plants, not trees.

6. Find and identify ten kinds of aquatic animals such as crayfish, mussels,
water striders, starfish, salamanders.

7. Collect and identify ten insects, ten plants, ten leaves, or ten shells.

8. Explain igneous, sedimentary, and metamorphic rocks.

9. Explain how some land feature such as a hill, canyon, or lake was formed.

10. Build a birdhouse or bat house and put it up in a good place.

11. Show slides of some wildlife at a 4-H meeting.

12. Plant ten trees and care for them.

13. Visit a wild bird refuge and make a report about your visit at a 4-H
meeting.

Design your own elective(s) on wildlife and conservation:

COMMON ARCHERY TERMS

ANCHOR POINT—A spot on the archer's face, chin, or cheek to which the archer habitually draws the bowstring.

ARMGUARD—A piece of leather or stiff material worn on the forearm to protect it from injury by the bowstring or a broken arrow.

ARROWHEAD—The point or tip of an arrow, particularly when fashioned for hunting.

ARROW PLATE—A piece of material that is glued to the side of the bow at the point where the arrow contacts it. It provides protection for the bow from the friction of the arrow.

ARROW REST—A small protrusion on the bow at the point where the arrow will rest during the draw.

BACK—The side of the bow away from the archer.

BACKED-BOW—A bow with a strip of other material glued to its back to give it greater strength or cast.

BARBED ARROW—An arrow with barbs designed for hunting and fishing so it will not come out.

BARBS—The sharp points of an arrowhead that project backward.

BAREBOW—A bow without a bowsight.

BARRELLED ARROW—An arrow that is larger in the middle than at the ends.

BELLY OR FACE—The side of the bow toward the archer.

BLUNTS—Blunt-tipped arrows often used for small game.

BOW ARM—The arm that holds the bow while shooting.

BOW REEL—A reel attached to the bow for bow fishing.

BOW SIGHT—An aiming device attached to the bow or bowstring.

BOW STRING—String of a bow, usually made of dacron.

BOWYER—A maker of bows.

BRACE—To string a bow; to place the loops of the bowstring in the nocks of the bow.

BRACE HEIGHT—The distance between the handle of the strung or braced bow and the bowstring; fistmele.

BROAD HEAD—A hunting point with two or more cutting edges.

BUTT OR MAT—A backstop usually made of straw, cedar tow, or sod on which the target is placed.

CANT—To hold the bow tilted or slightly turned while shooting.

CAST—The force and speed imparted to the arrow by the bow.

CLOUT—A white object such as a cloth placed on a stake as a mark for long-range shooting.

COCK FEATHER—Usually colored; should be upright or away from the bow when the arrow is nocked.

CREEP—To let the arrow slide forward on the arrow rest before releasing.

CREST—Painted bands on arrows for identification.

CROSSBOW—A bow fixed on a stock that has a groove or barrel to direct the arrow, a notch or catch to hold the bow string, and a trigger to release the string. Illegal for hunting during bow season.

DRAW—The act of pulling back the bowstring.

DRAWING ARM—The arm that draws the bow string.

DRIFT—Natural deflection of an arrow from its normal path due to outside factors such as wind.

END—A group of arrows (usually 4 to 6) shot consecutively at a target.

END LOOP—The part of the string fitting over the bow nock.

FIELD ARCHERY—Shooting arrows at targets at varying distances over different types of terrain, usually in woods or courses similar to golf courses. Targets may be bulls-eyes and/or animal types.

FIELD ARROW—A heavy duty arrow adaptable for hunting.

FINGER TAB—A piece of leather or other material used to protect the three fingers used on the bowstring.

FISTMELE—Distance between bowstring and bow handle when strung, but not drawn.

FLETCH, FLETCHING—(1) To attach feathers or plastic vanes to an arrow; (2) feathers or guiding vanes on an arrow.

FLIGHT BOW—A strong bow used to shoot a great distance.

FLIGHT SHOT—A shot for distance.

FREESTYLE—Using a bow sight; a tournament classification allowing the use of a bow sight.

GROUPING—A close clustering of arrows on the target.

GROUND QUIVER—Heavy wire shaft with a loop at the top to hold arrows while target shooting.

HANDLE—The rigid center portion of the bow which is held when shooting.

HEAD—Point or tip of the arrow.

HOLDING—Keeping an arrow at full draw while aiming.

INSTINCTIVE SHOOTING—Shooting without a sight, aiming with both eyes on the target, used for quick shooting.

JOINTED BOW—A bow whose limbs are joined at the handle; may be separated or folded for carrying and storing.

KICK—A bow is said to “kick” when a jar is felt after a shot.

KISSING BUTTON (KISSER)—An object on the string of a bow. It is used by sight shooters to establish a better anchor point. The object is touched with the lips when holding.

LAMINATED BOW—One made of several strips of different materials and glued together.

LIMB—Working (flexible) portion of bow, called upper and lower.

LONGBOW—A straight bow five or more feet long, not a recurved nor a crossbow.

LOOSE—To release or shoot a drawn arrow.

N.A.A.—National Archery Association

N.F.A.A.—National Field Archery Association

NOCK—(1) Grooves at the ends of the bow which hold the bow string, (2) the groove at the end of the arrow into which the bow string is fitted, (3) to place the arrow in position to shoot with the bowstring in the nock of the arrow.

OVERBOWED—Using a bow beyond one’s strength.

OVERDRAWN—Drawn too far, said either of the bow or arrow.

PETTICOAT—The portion of the target outside of the scoring area.

PILE—The head, tip, or point of an arrow.

POINT BLANK—Aim taken at a distance where the point of the arrow is in line with the archer’s eye and the center of the target.

POINT OF AIM OR AIMING POINT—(1) A small object placed on the ground between the bowman and the target. When the tip of the drawn arrow is in line with the bowman’s eye and the aiming point, it should be on target. The aiming point is moved until the arrows hit the target. Used in practice to develop uniform position and release, and for lawn archery. (2) Any object above or below the target on which the bowman sights.

QUARTERING WIND—A wind blowing obliquely across the target.

QUIVER—A holder or sheath for carrying arrows.

RECURVED BOW—A bow with tips that curve back in an arc; curvature usually 10–12 inches from end.

REFLEXED BOW—A bow which when unstrung bends in the opposite way to its curve when strung.

RELEASE—To loose (shoot) an arrow from a drawn bow.

ROUND—A prescribed number of arrows, ends and games, shot at prescribed distances.

ROVING—Shooting at random objects at unknown distances.

SELF-BOW—A bow made of a single piece of wood, not laminated or backed.

SERVING—A wrapping of thread around the bowstring at points of nocking to prevent wear.

SHOOTING LINE—The line the archer straddles when shooting.

SIGHT—(1) To aim; (2) a device placed on the bow string and/or how to enable the archer to aim directly at the target.

SIGHT WINDOW—The opening provided by an offset section of the bow to allow the arrow to point straight ahead.

SPINE—The stiffness of an arrow. Arrows should be matched in stiffness to the weight or cast of the bow.

TOXOPHILITE—One who loves, studies, and practices archery; one who studies the history and archaeology of archery.

TRAJECTORY—The path of an arrow in flight.

WEIGHT—The force (strength) required to draw the bow the length of the arrow, usually 28 inches.

WINDAGE—(1) The influence of the wind on an arrow in flight; (2) the extent of such deflection; (3) same as drift.

ROUNDS

Freeman Round (NFAA)

This round consists of 60 arrows shot as three games at distances of 9, 13.5, and 18 meters (10, 15, and 20 yards). Each game includes four ends of five arrows.

First Game-Three ends at 9 meters (10 yards); one end at 13.5 meters (15 yards).

Second Game-Three ends at 13.5 meters (15 yards); one end at 18 meters (20 yards).

Third Game-Four ends at 18 meters (20 yards).

The target is the standard NFAA indoor target of 40 centimeters with a blue-and-white face and an 8-centimeter bull's-eye, scored 5, 4, 3, 2, 1.

Indoor Round (NFAA)

This consists of 60 arrows shot as three games at a distance of 18 meters (20 yards). Each game has four ends of five arrows per end.

The target and scoring are the same as in the NFAA Freeman Round.

900 Round (NAA)

This is an outdoor target round. The course is set up in an open area. A 122-centimeter (48-inch) fivecolor target with 10-ring scoring is used.

Scoring, from center out, is 10-9-8-7-6-5-4-3-2-1. The distances and number of arrows are:

30 arrows at 60 meters

30 arrows at 50 meters

30 arrows at 40 meters

They are shot in "ends" of six arrows. This means the score is checked after each end of six arrows have been shot.

Junior 900 Round (NAA)

This is similar to the 900 round. The target face and scoring are the same; the distances are shorter. Distances and numbers of arrows are:

30 arrows at 50 meters

30 arrows at 40 meters

30 arrows at 30 meters

Easton Round (NAA)

A 122-centimeter (48-inch) target is used with 10-ring scoring. It is shot in ends of five arrows.

20 arrows at 60 meters

20 arrows at 50 meters

20 arrows at 40 meters

Junior Easton Round (NAA)

A 122-centimeter (48-inch) target is used with 10-ring scoring. It is shot in ends of five arrows.

20 arrows at 50 meters

20 arrows at 40 meters

20 arrows at 30 meters

Field Round (FITA)

Go to a certified archery range and shoot its course. This course is set up in the woods and takes a lot of space.

Adapted from the University of Washington 4-H Archery project EM4426.

Alternate formats of our educational materials are available upon request for persons with disabilities. Please contact the Information Department, College of Agriculture and Home Economics.

University of Florida, IFAS, 4H publications contain material written and produced for public distribution. You may reprint written material, provided you do not use it to endorse a commercial product. Please reference by title and credit University of Florida, IFAS, 4H.

The Institute of Food and Agricultural Sciences (IFAS) is an Equal Employment Opportunity – Affirmative Action Employer authorized to provide research, educational information and other services only to individuals and institutions that function without regard to race, color, sex, age, handicap or national origin. U.S. Department of Agriculture, Cooperative Extension Service, University of Florida, IFAS, Florida A & M University Cooperative Extension Service, and Boards of County Commissioners Cooperating.