

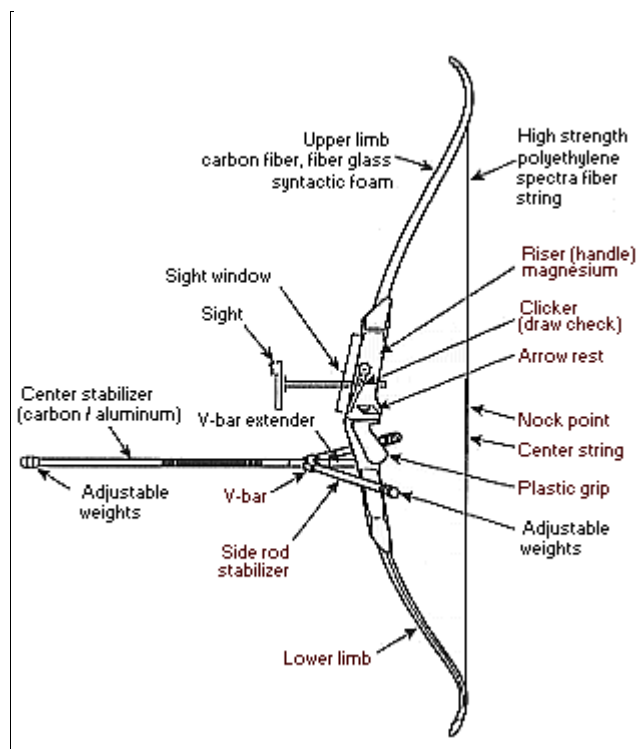


Common Bows

Olympic, or Recurve: The original type of bow allowed in Olympic competition. Its limbs curve away from the archer. This is the direct descendant of the bows of antiquity, differing only in the materials used and refinements. The force required to pull an Olympic bow increases directly with the distance pulled. **Compound:** This bow uses cams and cables to make the holding weight less than half of the draw weight. These bows are favored by bow hunters because of their greater accuracy, flatter arrow trajectory and their ease of use.

Beginners are often referred to the Olympic bow to start with, because it is deemed more difficult to master. The force required to hold the bow while aiming is considerable, sometimes requiring an archer to "let down" the bow without firing in order to rest the back and arm muscles. Mastery of the Olympic bow results in better muscle tone and overall archery habits; once that is accomplished the Compound bow represents a leap forward in accuracy and force. Also, a Compound bow is built for a particular draw length, which may not be easily changed. Growing bodies will grow out of compound bows swiftly in the teen years.

The Recurve Bow



Bow handles (risers) are made of aluminum alloys and are machined for a combination of strength and lightness. Some bow handles are made of a magnesium and aluminum mixture which is heated to liquid form and poured into a mold. Once cooled, it is cleaned, final machined and painted. Some lower cost, children's bows have wood risers, as do some rather expensive, hand made bows.

Bow limbs are generally constructed of man-made materials, such as fiberglass, carbon and syntactic foam. The limbs store the energy of the draw and release it to the arrow. The string and the limbs are commonly removed from the riser when the bow is not in use, allowing for easy storage of the "knocked-down" bow.

Bows have stabilizers to reduce torque (twisting) in the arrows upon release. They also have sights to aid in aiming and rests to help align the shot.

Most bow strings are made of either "Fast Flight", a hydrocarbon product that also has medical and other uses, or "Kevlar", the material used to make bullet-proof vests. The important point to be made about the string is that it must not stretch under normal environmental conditions, as that would change the bows pull weight and make consistency impossible. A layer of string material called the serving is placed where the arrow is nocked to snugly match the notch on the arrow, and a small ring is permanently placed on the serving to mark where the arrow rests when nocked. A small button, called the kissers button, is often used to assure that the back end of the arrow is always pulled back to the proper, repeatable anchor point. When properly drawn, the kissers button rests right between the lips.

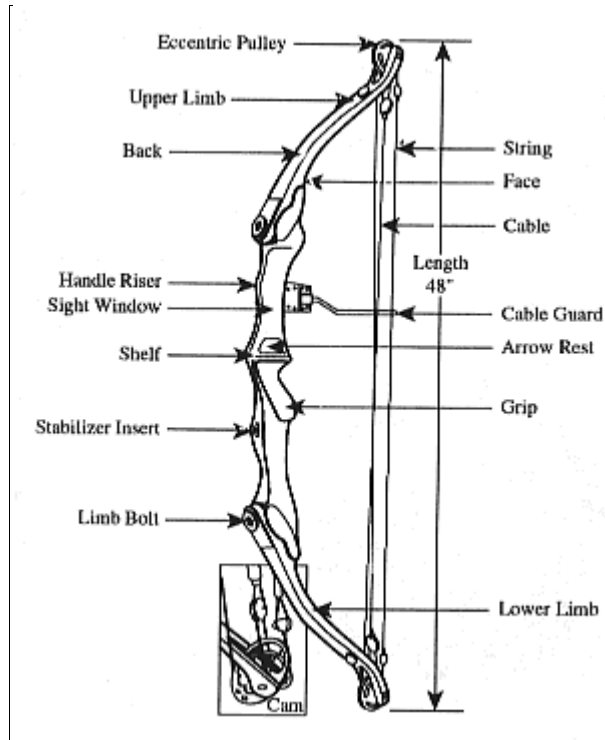
An arrow is pulled back to the anchor point using the middle three fingers of the draw hand. These fingers are often covered with a glove or a leather "tab" which protects the fingers. A tab may have a metal shelf built in so that the two fingers on either side of the arrow do not squeeze it.

On Olympic bows a clicker is a small, spring-loaded lever that is held out away from its resting point by the arrow. When the arrow is drawn back to exactly the same point each time, the clicker slips past the tip of the arrow, producing an audible "click", which tells the archer he has the arrow at the same, repeatable release point. This causes very close to the same amount of tension to be used on every shot, so the arrow flight is the same.

A sight allows the archer, when the arrow is properly drawn, to line the bow up with the center of the target by eye. The sight generally has adjustments in up-down and left-right dimensions with caliper-style read outs so that ageing equipment, weather, temperature and distance to the target may be accommodated. Olympic archery allows for sights which do not have lenses or electronics associated with them.

Arm guards and chest protectors protect the skin from string burn, as well as provide a low-resistance surface that the string may skim over easily upon release. A pair of binoculars or a sighting scope allows the archer to see the arrows in the target, and thereby make corrections to the sight as required. A quiver to hold arrows and other paraphernalia completes the archer's accessories. The NAA, in accordance with FITA rules, has established a dress code that is used at all NAA tournaments; this accounts for the "whites" look of the competitors.

The Compound Bow

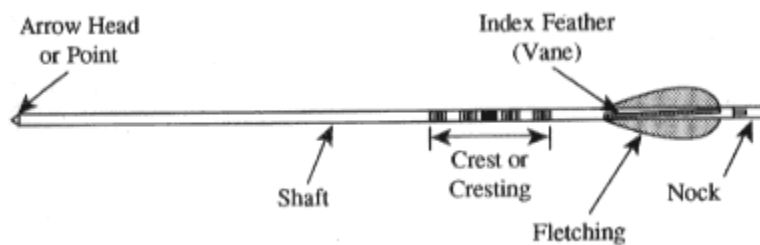


The Compound bow, unlike the Olympic/Recurve bow, is never knocked-down between uses. The great tension preset into the limbs can only safely be countered when the bow is couched in piece of equipment called a bow press. The cams are synchronized when this is done, and are held in place by the tension. Compound bow cases must be able to accommodate the entire bow.

Because the Compound bow's forte is accuracy, equipment which increases the accuracy is deemed fair for compound use while it is not for Olympic archery. The site may include electronics and/or lenses to increase accuracy, and a release, rather than fingers, may be used. A release is a mechanical "finger" that grips the string and releases it when the trigger is pressed by the draw hand.

The Arrow

Arrows in the recurve (Olympic) bow events can travel in excess of 150 miles per hour, while compound arrows can fly in excess of 225 miles per hour. The shafts are made of either aluminum or aluminum with carbon fibers. Aluminum arrows are more uniform in weight and shape, while carbon arrows fly faster and provide less cross-wind resistance, and are therefore more useful in long distance outdoor archery.



The business end of the arrow is weighted and tipped with a target point, designed to penetrate but a short distance in the target butt. Hunting arrows, of course, use a different, extremely sharp

cutting point called a field point. All NAA sanctioned events use only target points, except for certain Flight archery events.

The other end features a nocking point, a plastic cap glued or otherwise attached to the end of the arrow. Its fingers grip the string until flung loose, and it provides a protection for the shaft by deflecting hits from later incoming arrows. This generally destroys the nock, but leaves the arrow reusable. Sometimes, of course, the aim is too perfect to deflect; the resulting "Robin-Hood" is both spectacular and expensive, as both arrows are usually destroyed.

On the shaft itself fletching are glued to stabilize the arrow's flight. Sometimes they are glued in such a way as to cause the shaft to spin around its long dimension, further stabilizing its flight at a cost to its flat trajectory. The fletching are generally three in number, one of which (the index feather) has a different color than the other two. The nock is installed gripping the string perpendicular to the odd fletch, so that it's friends both brush the riser equally, minimally disturbing the arrow's flight.

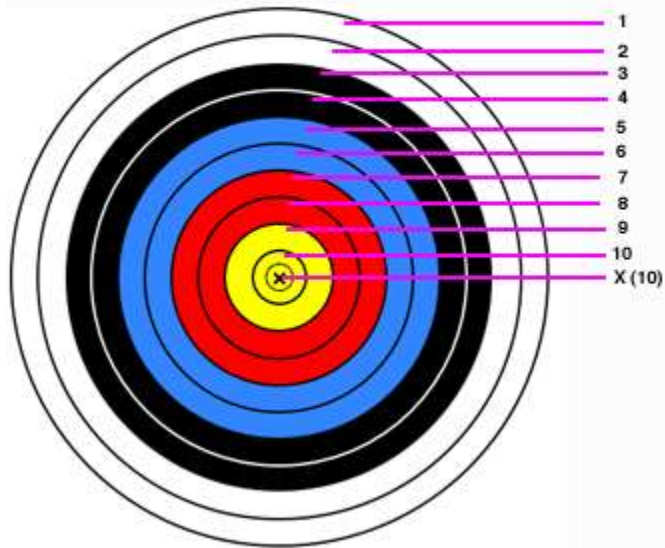
Fletching may be plastic "feathers" or solid vanes, in a variety of shapes, lengths and, of course, colors.

Markings, called crests, may be drawn on the arrows at the owner's discretion. However, the NAA requires that all arrows be marked with the owner's initials so that they can be unequivocally identified while embedded in the target.

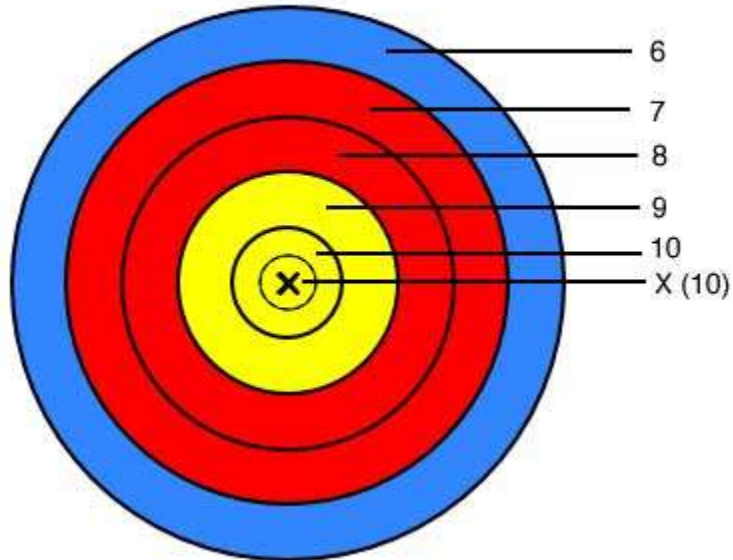
The Basics of Target Archery

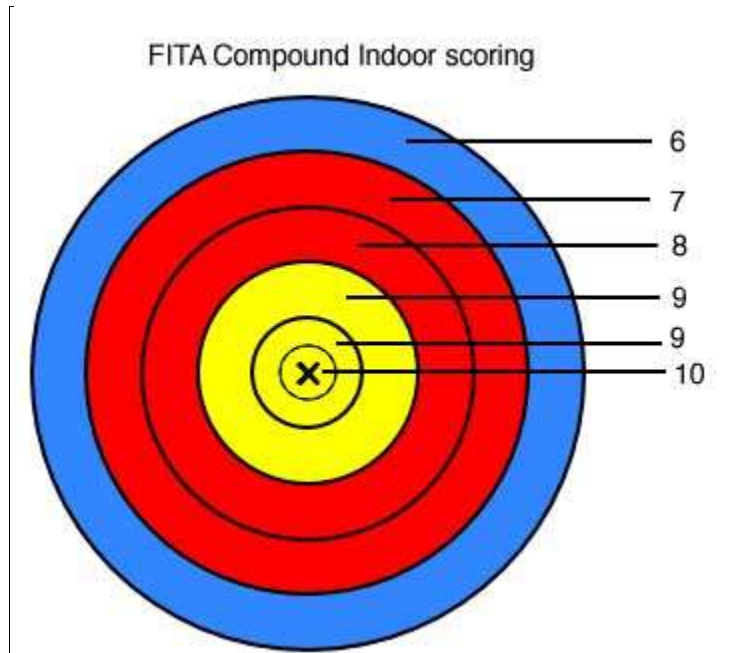
Archery is a sport in which the participant uses a bow to shoot arrows at a target which has ten concentric circles. The score of each arrow depends upon where it lands on the target. The highest score, a ten, is achieved by shooting an arrow into the center, or bull's-eye. Scores go down from nine for the next circle out to one for the outermost circle. Missing the target results in a score of zero for that arrow. For indoor compound archery, a ten is scored only when the arrow lands inside the inner ten ring. After each end of arrows is shot, the arrows are scored. The number of hits (non-zero scores), tens and Xs (hits within the inner ten ring) are also recorded for the purpose of breaking ties in the final scores.

Scoring for outdoor target. Metric



Vegas/Aust/FITA recurve Indoor scoring





Outdoor

Most major outdoor target archery competitions in the U.S. follow the same format of a FITA Round followed by an Olympic Round.

The FITA Round consists of 36 arrows shot at each of four distances (90, 70, 50 and 30 meters for men; 70, 60, 50, 30 meters for women) for a total of 144 arrows. Scores are then totaled to determine seedings into the Olympic Round. Arrows are generally shot in groups (called ends) of six within a specified time period.

The Olympic Round is a direct elimination, head-to-head style of competition, all at 70 meters.

The winner of each match advances until a gold medalist is determined. All matches are 18 arrows, except the quarterfinals, semifinals and finals, which are 12-arrow matches.

The U.S. Target Championships utilize a FITA followed by an Olympic Round. FITA scores are totaled to determine seeding into the Olympic Round. The targets used at outdoor events have 122 cm diameter faces.

Indoor

Indoor tournaments are held for the Olympic (recurve) and Compound Divisions. Olympic Division events are generally held at either 25 meters or 18 meters.

In a 25-Meter Indoor Round, archers shoot 60 arrows at a 60 cm diameter target face. In the 18-Meter Indoor Round, archers shoot 60 arrows at a 40 cm diameter target face.

Championship events employ a Grand Indoor Round which starts off with a Combined Indoor Round (both 25-Meter and 18-Meter rounds) followed by a direct elimination competition for the top 16 archers. These direct elimination matches are 15-arrow matches shot at a special 20 cm diameter target face.

For the compound division, a Combined Indoor Round includes 60 arrows shot from 25 meters at 40 cm diameter target face. A Double Compound Indoor Round includes two successive Combined Indoor Rounds.

The Grand Indoor Round is used in championships. It consists of a Double Compound Indoor Round from which the top 16 archers go into a direct elimination with 15-arrow matches from 25 meters at a special 20 cm diameter target face.

Archery's Costs

Beginners' Level: Equipment can be rented for approximately \$3. Used beginners' equipment (bow, arrows), can be bought for less than \$100. Beginners' equipment (new) can be bought for about \$100. Basically, archery is like golf when it comes to equipment - if you want to go out and buy top of-the-line equipment at the start, you can spend up to \$1,500 or more.

Competitive Level: Equipment (bow, arrow, sights & other accessories) can range from \$800 to \$1,500, or more.

The Metric System in Archery

Since FITA is an international organization with a French name, started in France by Europeans it is not unusual that it should have chosen to use metric measurements rather than English one. However, the English system, and the influence of British Archery tradition, have not gone unfelt. The traditional indoor shooting distance was 20 yards; the metric equivalent of 18 meters is only about a foot shorter, a trivial, though duly marked, difference. The target sizes of 40, 60, 80, and 122 centimeters closely match English equivalents of 16, 24, 32 and 48 inches. Longer shooting distances are approximated with this chart:

Meters Yards	
30	32
50	54

60	65
70	76
90	98

In the end, archery is a mental game of skill and coordination. The ultimate aim is consistency; the ability to do exactly the same thing over and over again. The skill must be learned into habit through practice, while providing the ability to recognize and selectively correct out or incorporate changes into the archery routine.