

Adventurer's MK

KNOTS AND LASHINGS

Introduction

Knots and lashings can become a very useful skill in itself. Once you have learnt the basic ideas of knots and progressed on through the Troop you will begin to pick up those true pioneering skills.

These skills include:

- Knots – needed to tie down loads or tie a shoelace.
- Lashings – the ability to join structures together without any nails or bolts. It also helps to understand basic, strong engineering structures.
- Estimating – being able to work out heights, widths and other dimensions/distances when there are no instruments or equipment available.

It really is a great feeling of achievement to construct a major bridge and framework across a river. Such pioneering activities can bring together not only your knotting skills but principles of teamwork, self-motivation, physical abilities and problem solving.

Sailors were always the leaders in the tying of knots because for them it was necessary to tie securely but also to be able to untie rapidly, often in the dark and in appalling weather with rain-tightened ropes.

TYPES OF ROPES

Ropes are made with natural and synthetic fibres. Natural plant fibre from sisal, hemp, manila or cotton can be processed and made into rope. Hemp and manila are the most common natural fibre ropes. They are often used in larger sizes for rope bridging because they don't stretch very much and are easy to grip when wet.

Synthetic ropes are usually made from nylon, polyester, polypropylene or dacron. These synthetic ropes are generally stronger and lighter than natural ropes. Nylon is the strongest, but it also stretches significantly and sinks in water. Polypropylene ropes float, but are not as strong as nylon or polyester.

They can be manufactured using "laid," "woven," "kernmantle" or "sash" methods. Laid ropes are usually made of three main strands twisted around each other, each strand consisting of many individual fibres which are also twisted around each other. Laid and woven ropes are made for use in many situations while sash ropes are often decorative or made for light-duty purposes. Kernmantle ropes are used primarily for climbing, abseiling and rescue. They are synthetic ropes, with a protective outer sheath, that are tested for strength using set standards.

CARE OF ROPES

Ropes, like other pieces of equipment, require care and maintenance to ensure they work when you need them to. Some rules of rope care to remember are:

- a. do not step on a rope;
- b. distribute wear on the rope;
- c. keep it dry and clean – wash with mild soap when dirty;

- d. store coiled, in a dry place with all knots and kinks removed;
- e. do not store near strong chemicals (acids , cleaning solutions) as the fumes may damage the rope fibres;
- f. rope ends should be whipped, melted or bound to keep rope from unravelling;
- g. avoid snagging on, or dragging across, sharp rocks; and
- h. always inspect a rope before and after use for damage.

SECURING THE ROPE END

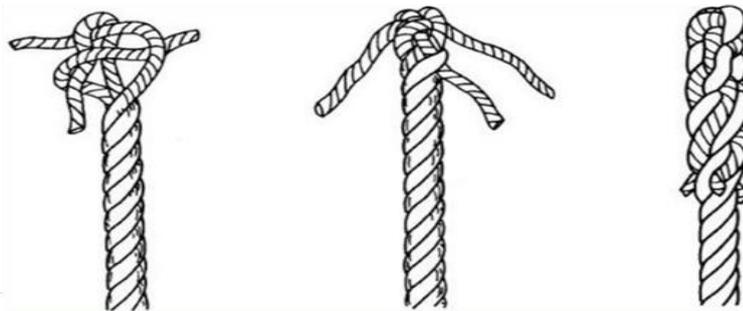
There are different ways of securing the end of a rope. The method used will depend on the type of rope. In Nylon based rope the ends are melted together using heat. After the end has been fused together, it helps to roll it into shape on a hard surface. One of the two methods discussed below are used to secure the end of a natural fibre rope.

1. Backsplice

Step 1: A knot is formed on the end of the rope.

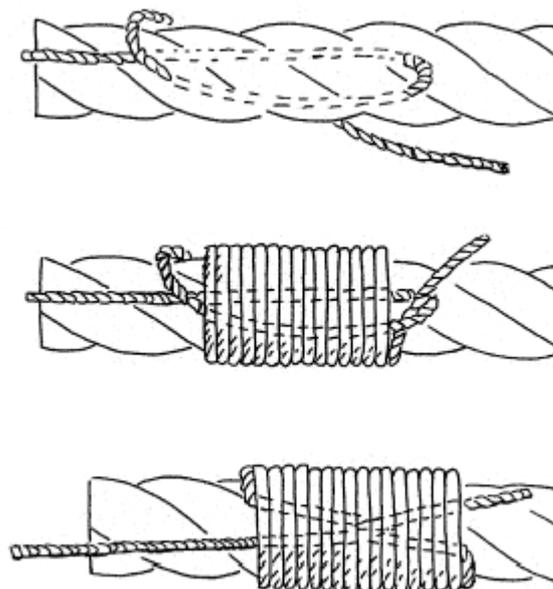
Step 2: A Turk's Head is formed in the end of the rope by dividing the three strands.

Step 3: Then the three strands are tucked under the strands in the rope by tucking each strand under a separate formed strand. The disadvantage about this form of securing the end is that increases the circumference of the rope.



2. Plain Whipping

This method uses twine to secure the end of the rope. Whipping is a better way of securing the end of a rope because it does not increase the size of the rope and is therefore able to go through the eyes of Tarpaulins or a tackle block.



TERMS

The following terms are used when describing the formation of the various bends and hitches.

- **Bight** – is the middle part of a length of rope. This term also refers to a loop of rope, and to make a bight is to form a loop. Note that the rope does not cross over itself in a bight.
- **End** – (or 'running end') is the short length at either end of a rope, which may be formed into an eye, or used for making a bend or a hitch. The end of a rope is also that length of rope left over after making such an eye, bend or hitch. This is commonly the part of the rope that you manipulate to make the knot, bend, lashing etc.
- **Standing Part** – this part of the rope usually 'stands still' during the knot tying process. Often it is the longer end that leads away from the loop bight or knot.
- **Whipping** – Before using a rope, whip the two ends to keep them from unravelling. To whip the ends of a rope, use a piece of twine or cotton fishing line about 15 cm (6 in.) long. Make it into a loop and place it at the end of the rope. About 6 cm (3 in.) from the end begin to wrap the twine tightly around the rope. When the whipping is as wide as the rope is thick, slip the end through the loop, pull the end of the loop hard, and trim off the twine. Then whip the other end of the rope.

KNOTS

Knots, bends and lashings are all used to employ rope as a tool for binding, building or securing. A good knot will maintain much of the strength of a rope, be easy to untie even after loaded, and won't slip or come undone accidentally. Knots are always a temporary connection, and should not be left in ropes after use. Each knot has a specific purpose and is suitable for use with specific sizes of rope. You need to know how to tie each knot properly, and when and where to use which knot.

There are different kinds of knots for different purposes, there is no such thing as a one knot fits all, and so knowing a variety of different types will always prove to be beneficial. In bushcraft work probably half a dozen knots would suffice.

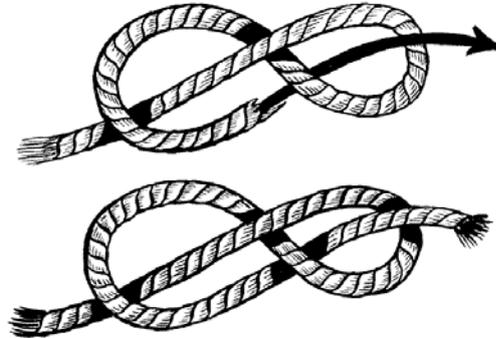
Reef Knot

- **The Reef Knot** – is used for joining two ropes of equal thickness. It is also used in first aid for tying bandages. It lies flat, holds well and is easily untied. This knot can also be used for tying packages, but should never be used to tie two ropes together that will be under load.
- **To tie this knot remember:** 'left over right and under, right over left and under.'



Figure 8 Knot

- **The Figure Eight Knot.** This knot has the same uses as the thumb knot, but is easier to undo. To tie this knot, with the rope away from you, take the standing part in the left hand, palm upward and the running part making a loop, then carry on with the running end round behind the standing part, over the top, then down through the loop which you have formed



- **The Double Figure of Eight Knot** – is used to anchor a rope around a tree trunk, pole or such item. Start this knot by tying a figure of eight knot several feet in from the end of the rope. Pass the end around whatever anchor you have chosen. With the end of the rope, trace the path of the rope that the figure of eight knot takes. Be sure to keep the running end alongside the standing end as you pass it through the original knot – This knot will not slip and is easy to undo.

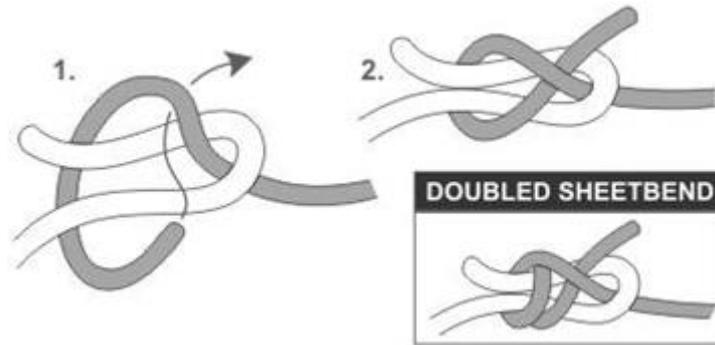
The figure eight follow through is one of the strongest knots. It forms a secure, non-slip loop at the end of a rope. Also known as the Flemish Bend, this is the most widely used tie-in knot by mountain climbers. The reason is that it is strong, secure and easy to visually inspect. Climbers often further secure it by tying a back up knot with the tag end.

The knot can also be tied by tying a Figure Eight Knot with doubled line at the end of a rope



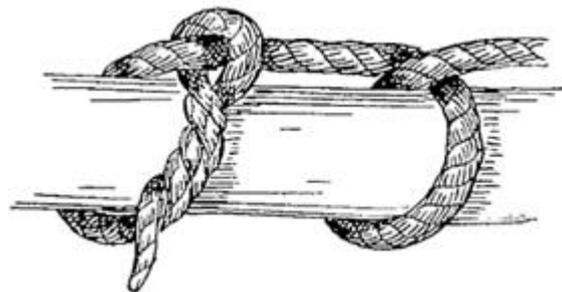
Sheet Bend

- **Sheet Bend** - The sheet bend is very similar to the square knot, granny knot, thief knot, and particularly the bowline. In fact, the sheet bend can be tied using the One Handed Twist Method which is also used to tie the bowline. It is the recommended knot for tying two ropes of different thicknesses together.



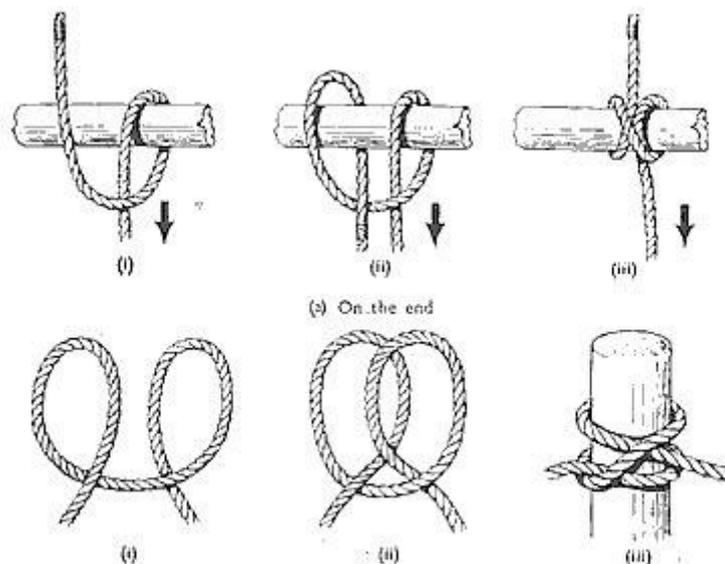
Timber Hitch with Half Hitch

- Timber Hitch with Half Hitch** - The Timber Hitch with Half Hitch (Figure 5.14) is used for hauling long objects, such as beams, in an upright fashion. First, form a simple Half Hitch above the centre of the object, by making an overhand loop and drawing the end well down, while the standing part goes straight up. Allow enough bight below the Half Hitch to form a Timber Hitch around the lower portion of the object, tightening the free end with the customary double twist. Hoist the object with the standing part of the rope.



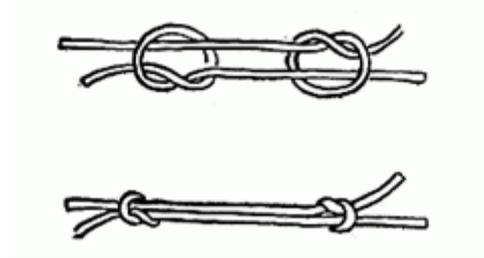
Clove Hitch

- Clove Hitch** - A simple all-purpose hitch. Easy to tie and untie. A useful and easy to tie knot, the Clove Hitch is a good binding knot. However, as a hitch it should be used with caution because it can slip or come undone if the object it is tied to rotates or if constant pressure is not maintained on the line.



Fisherman's Knot

- **Fisherman's Knot** - Though the fisherman's knot is associated with fishing, it can slip when tied in nylon monofilament and other slippery lines; however, if more holding strength is required, the overhand knots can be made with more turns, as in the double fisherman's knot, and so on.



Why "Pioneering"

1. Pioneering teaches practical life skills which include:

- Being able to tie basic knots.
- Understanding which knot is suitable and in what situation.
- Being able to respond to an emergency where some knowledge about knots is needed.
- Being able to practice the following skills: securely tie timber together, create useful objects, solve problems and participate in search and rescue.
- Being able to maintain a rope in good condition: coil it, store it, and understand the different ropes in the market.
- Being able to secure a load on a trailer or vehicle.

2. Pioneering develops the ability to solve problems:

- It explores a variety of problem solving skills.
- It enhances any camping or outdoor experience.

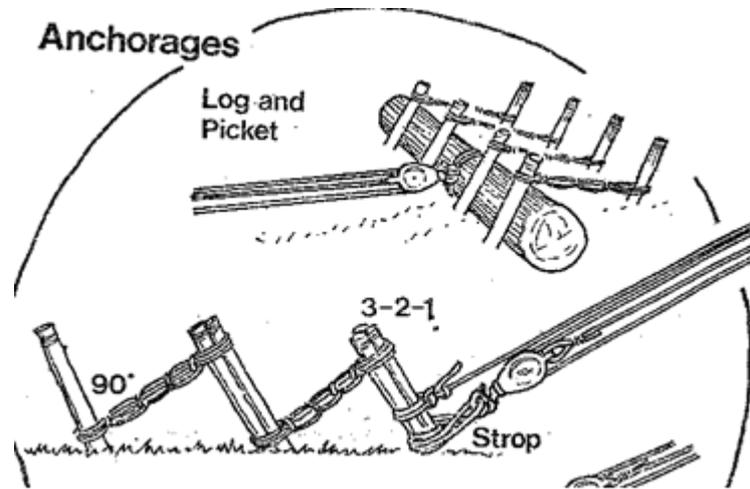
The strongest shape in Pioneering is the triangle. The two side poles are lashed to the base first using a square lashing. The two side poles are then pulled together and a Diagonal Lashing is used to bring the two sides together. It is important to make sure that the shape is correct for a standing triangle.



Square shapes or trestles must be strengthened with diagonal braces to keep them square. Lash all of the poles that make up the square first. When the square is completed, lash the two diagonal poles by attaching the lower lashings before the upper lashings. When the upper lashings are done, make sure that the structure is square. All of the lashings are Square Lashings. The top of the trestle is always smaller than the bottom.

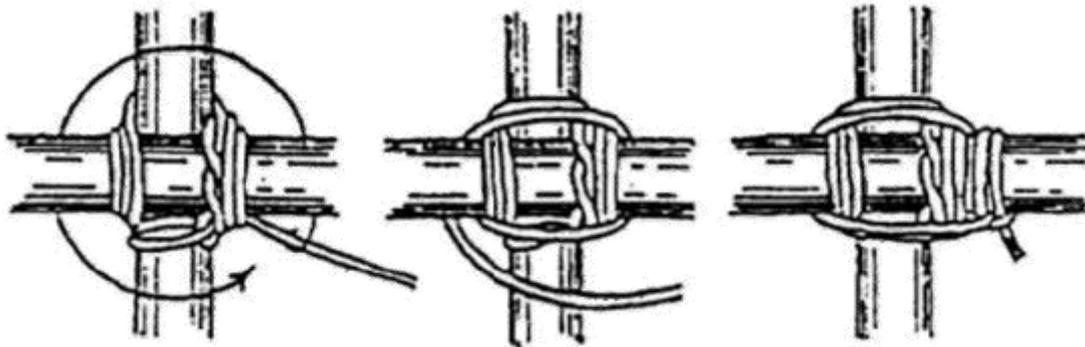
A trestle or triangle frame that stands by itself must be secured with ropes and pegs in the ground.

A rope that is used as a means of moving someone over a section of ground between two trestles must be set up so that the tension is not lost in the stretch of the rope. The rope should be securely fastened by being attached to a tree or with pegs being backed up in the ground by solid anchorages. It also needs to be tensioned so that there is limited stretch



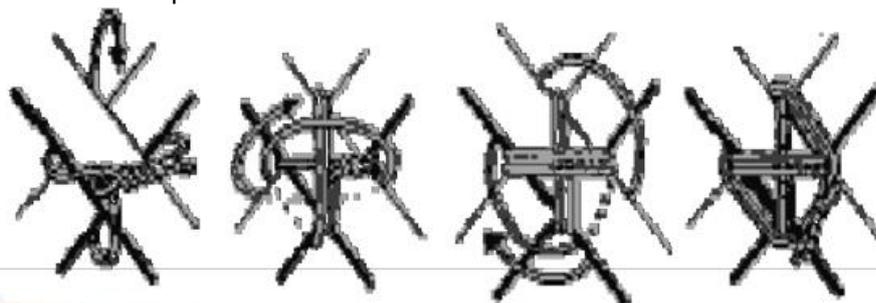
The Square Lashing

The Square Lashing is the standard lashing that is used most of the time. It is used to bring two crossing timber poles together and to prevent one sliding along the other. Begin with a clove hitch and end with two half hitches. The Clove Hitch is always tied under the pole/spar that has the load bearing on it. The end of the rope is then twisted around the rope as it is wrapped around the spar as illustrated in the diagram above. Make four wrapping turns and two frapping turns between the poles. Keep the rope as tight as possible. Lay the rope as shown in the picture.



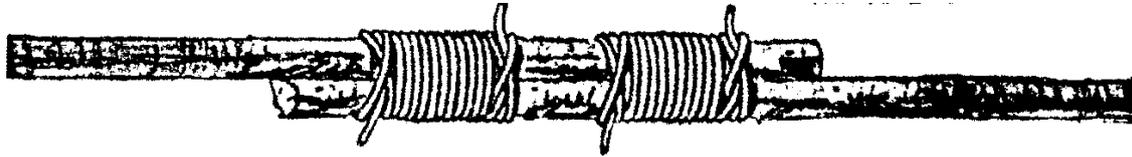
The Diagonal Lashing

The Diagonal Lashing is used to hold two poles/spars together that tend to spring apart. The lashing starts with a timber hitch and ends with two half hitches. The rope is wound around three times as shown in the diagram. Three one way and three the other to form a St Andrews cross. Frap around twice. Keep tension on the rope.



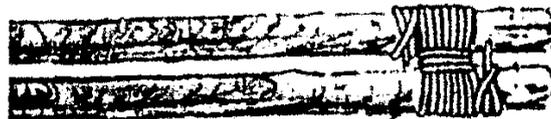
The Round Lashing

The Round Lashing (Figure 6.3) is used to join two poles so that they can be made longer. Start the lashing with a clove hitch on one pole. Turn the rope around both poles until almost out of rope. Finish off with two half hitches around both. Tighten the whole lashing by knocking small wooden pegs down between the timber poles under the rope.



The Sheer Lashing

The Sheer Lashing (Figure 6.4) is used when the load is going to be between two timber poles such as for a rope bridge. Place the timber poles beside each other and begin by tying a clove hitch around one of the timbers. Keep a space between the two poles by putting in small spacers (wood) so that there is room to do the frapping between the two poles. Wrap the rope around the two poles then complete the frapping with enough rope to finish off with two half hitches.



The Tripod Lashing

The Tripod Lashing is used so the poles can be split to form a tripod. This can be used in making a basin stand. It is the same as Sheer Lashing except there are three spears involved.



The Continuous Lashing

The Continuous Lashing is used to secure a tabletop or the lookout platform on a tower. Lay the table poles in place.

- Step 1: Centre the rope and tie with a clove hitch.
- Step 2: Take the two lengths of the rope and pass them over the table poles and cross the ropes under the support pole as demonstrated in the diagram.
- Step 3: Push the next pole up into place. Put the two ropes over and cross under and continue the process until you have the table top or platform you are constructing.

Finish off with a square knot.

