

Know your Knots

(and how to use them)

A simple guide for
ropemaking and
6 common knots
used in the outdoors.

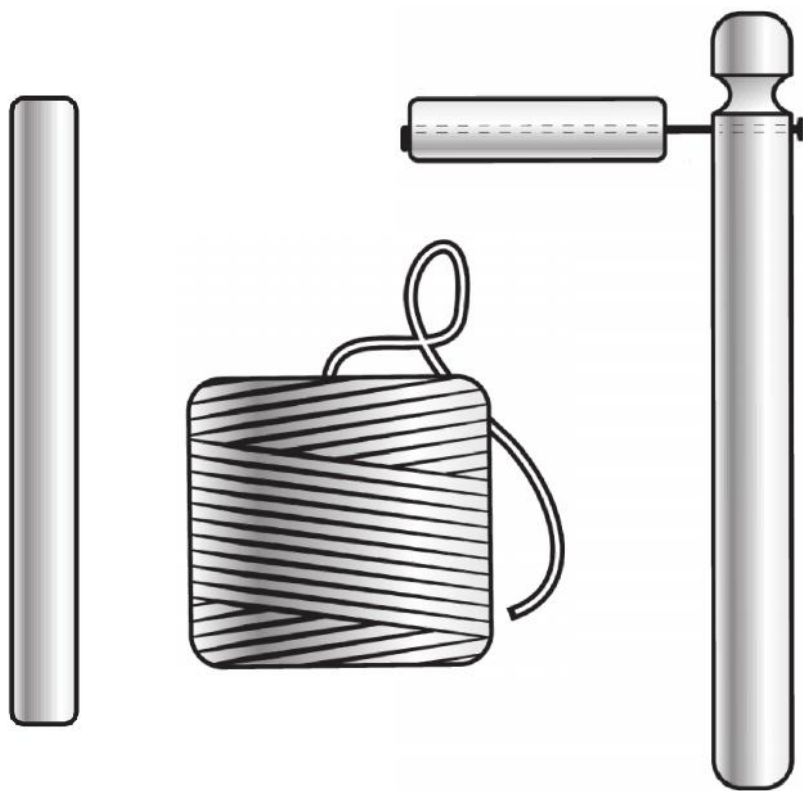


Rope: A length of strong cord made by twisting together strands of natural fibers such as hemp or artificial fibers such as polypropylene.

Rope can be fun and easy to make using materials that are inexpensive to gather and assemble.

The tool that is utilized here is called a Pendulum-Style Spinner and can be made using a broom handle and a 7-8 inch nail.

The twine can be found at most 'Dollar' stores...

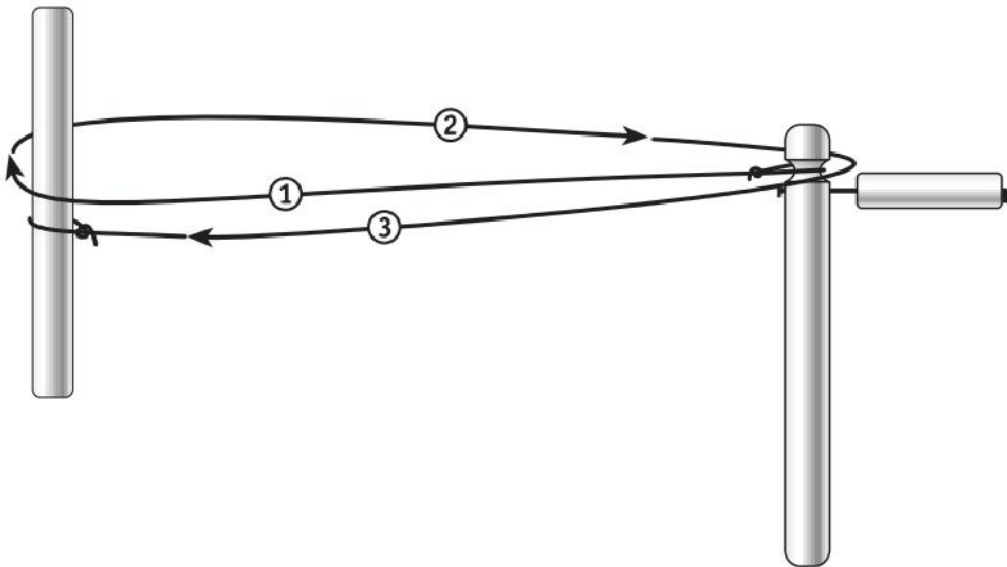


Step 1

Attach the ends of the twine to the spinner and anchor stick using a loop knot. Make sure that the loop is large enough to slide over the spinner when you are finished or you will need to cut it off when the rope is completed.

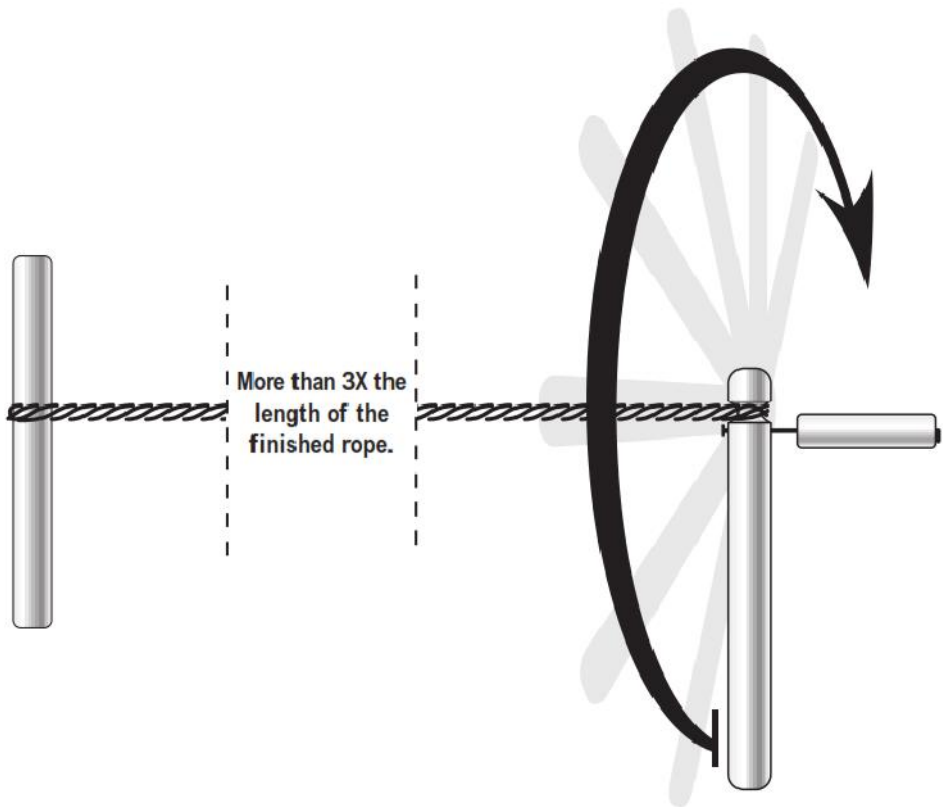
Three yarns of twine make for a nice length rope but you can add more for a thicker diameter rope.

You will need more than 3 times the desired length of rope in twine to complete your project.



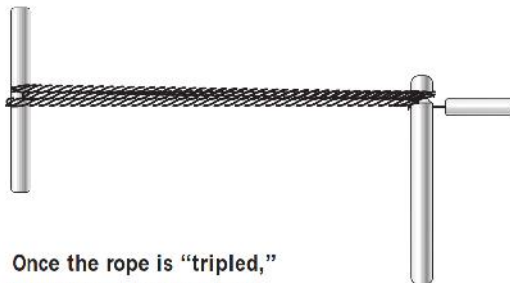
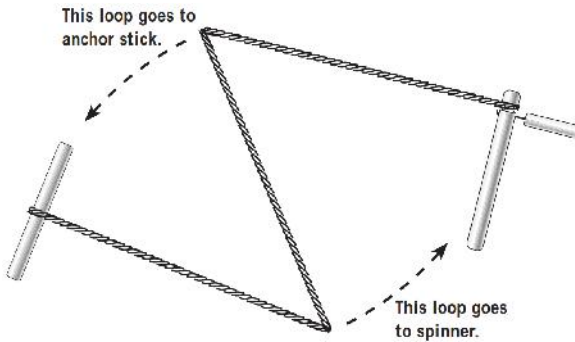
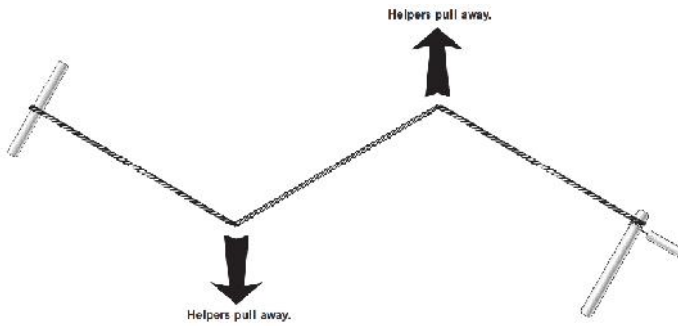
Step 2

Stretch the twine to ensure all of the yarns are of equal tension then begin spinning the spinner clockwise. Practice will tell you that the strand is 'just right' when it becomes difficult to spin while the strand is under moderate tension.



Step 3

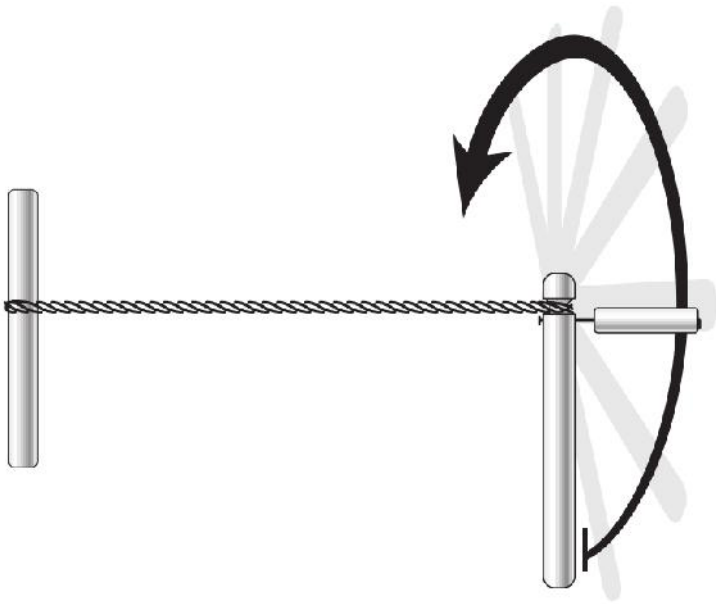
You will now triple the strands with the assistance of 2 helpers. While maintaining tension of the strand, place the helpers at "thirds" on opposite sides of the strand. Have each helper back up while holding his/her segment. The bends are then looped over the spinner and anchor stick making the rope one-third its original length.



Once the rope is "tripled," it is one-third the length of the original spun strand.

Step 4.

Stretch the 3 strands until they are of equal lengths and continue spinning in the opposite direction (counterclockwise) until tight. Overtighten this spin and pull a quick tug of war to "set" the rope.



Step 5

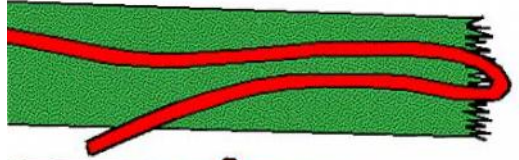
Slip the rope off the tools and allow to relax a bit. Whip the ends and you're done! If you wish, burn off any hairy fibers with a candle or propane torch.



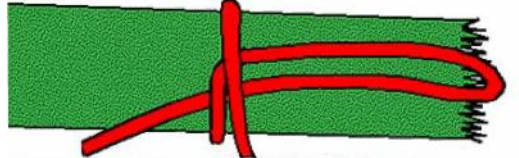
Whipping the rope.

Whipping the ends of the rope prevents fraying and prolongs the life of the rope. The twine used to tie the whipping should be significantly thinner than the rope it is tied around. Natural fiber is best.

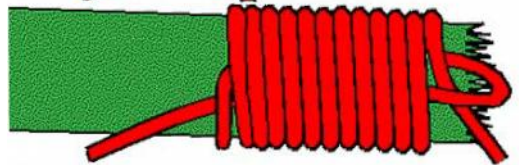
Using a 12 inch piece of string, loop as shown and make several turns around your rope.



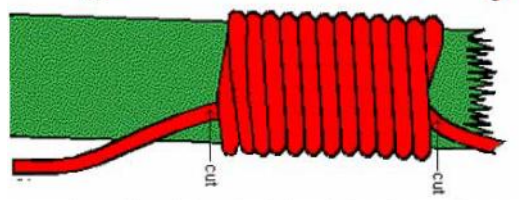
Take the running end of the string and pass it through the loop at the end.



Pull the standing end of the string drawing the loop under the wraps of string.



Trim off the excess ends of string.



Fusing the rope.

Plastic or nylon rope and cord melt when exposed to high heat.

To fuse a rope:

1. Cut away the frayed part of the rope.
2. Working in a well-ventilated area, hold each end a few inches above a lighted match or candle to melt and fuse the strands together.



Melted rope can be hot and sticky; don't touch the end until it has cooled. Do not try to fuse ropes made of natural fibers.

Square Knots are used primarily to join two ropes, cords or lines of similar thickness.

Uses for Square Knots:

First aid, to tie bandages

To tie boot or shoe laces

To tie plastic bags and trash bags

When Not to Use A Square Knot:

Square knots are not your best choice when you have two different thicknesses you wish to join.

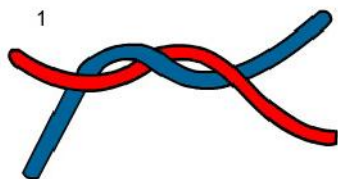
Square knots slip when you tie them with nylon rope.

A square knot will also slip if it is not under tension.

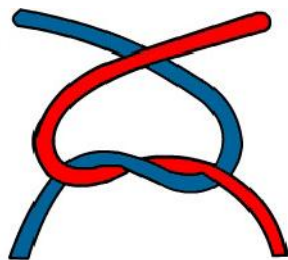
Square Knot Instructions:

1. Remember this “right over left, left over right”
2. Take one line in your right hand, and one in your left and lay the right over the left.
3. Pass the right end over the left end and back under the left.
4. Pass the left end over the right end and back under the right.
5. Check the knot (the two loops should slide on each other)

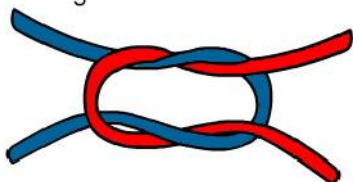
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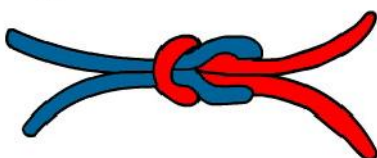
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3



4



7

A **Bowline Knot** is one of the most useful knots you can know. The Bowline forms a secure loop that will not jam and is easy to tie and untie. It is said to retain 2/3 of the strength of the line in which it is tied.

Uses for Bowline Knots:

Commonly used for forming a fixed loop, large or small at the end of a line. Used in rescue situations. .

When not to use a Bowline Knot:

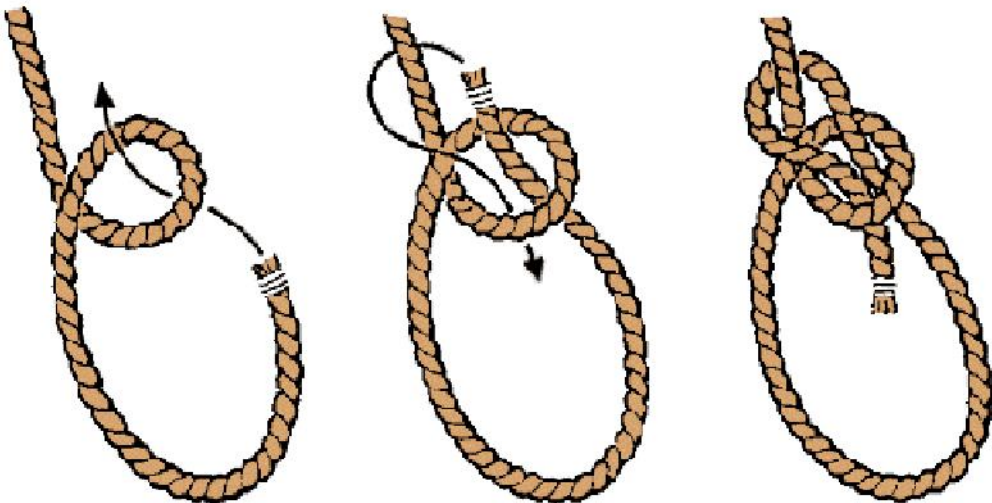
Because it does untie so easily it should not be trusted in a life or death situation such as mountain climbing.

Bowline Knot Instructions:

A mnemonic used to teach the tying of the bowline is to imagine the end of the rope as a rabbit, and where the knot will begin on the standing part, a tree trunk.

1. A loop is made near the end of the rope, which will act as the rabbit's hole.
2. Then the "rabbit" comes up the hole, goes round the tree right to left, then back down the hole.

This can be taught to children with the rhyme: "Up through the rabbit hole, round the big tree; down through the rabbit hole and off goes he."



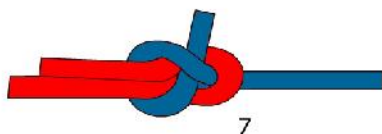
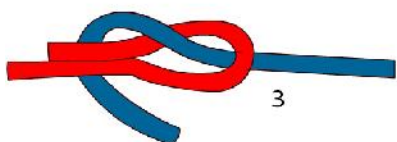
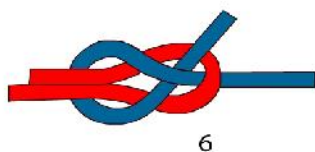
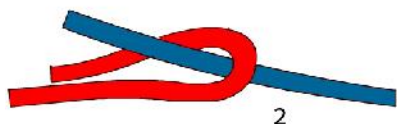
A **Sheet Bend** is a knot that is used to join two ropes of different diameter together.

Uses for a Sheet Bend: When joining ropes in non-critical applications. Also known as a Weaver's Knot as it was used to join threads or yarn used in a loom.

When Not to a Use Sheet Bend: While an effective knot, it has a tendency to work loose when not under load.

Sheet Bend Instructions:

1. Form a "bight" in the running part of the left-hand rope.
2. Bring the running part of the right-hand rope thru the eye.
3. Wrap the right-hand running part around the 2 left-hand strands.
4. Pass right-hand running part over the left-hand standing part.
5. Then past under the right-hand rope.
6. Then over the standing part of the left-hand rope.
7. Pull tight.
8. Reverse view.



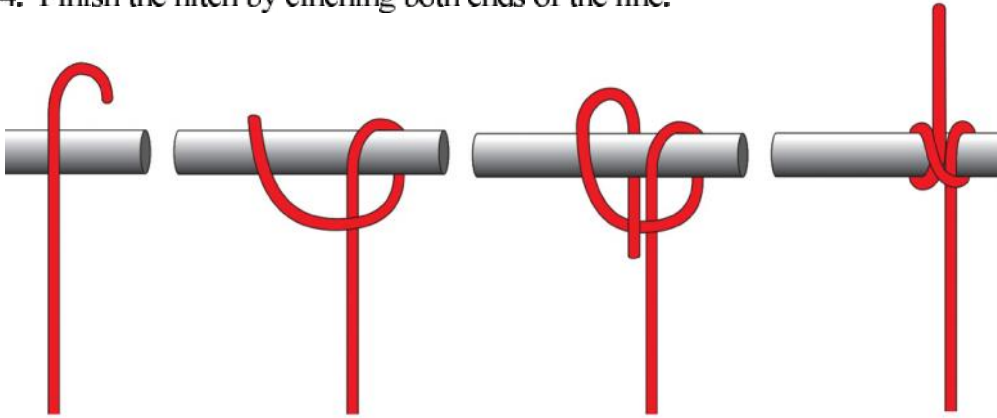
A **Clove Hitch** is a binding knot commonly used in pioneering to start and finish lashings.

Uses for a Clove Hitch: Useful where the running end of the rope needs to be adjustable since feeding in rope from either direction will loosen the knot to be tightened at a new position

When Not to Use a Clove Hitch: While an effective knot, it has a tendency to work loose when not under load.

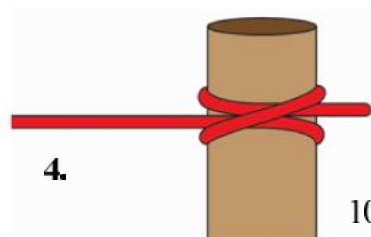
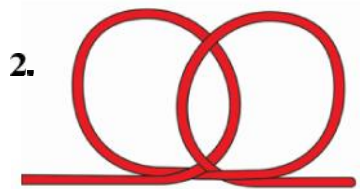
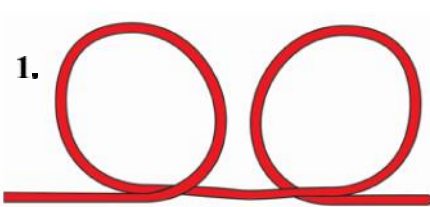
Clove Hitch Instructions:

1. Wrap line on a rail
2. Continue the loop around the fixed bar with the line crossing in front.
3. Create a second loop with the line passing between the bar and the line.
4. Finish the hitch by cinching both ends of the line.



Clove Hitch Mid-Rope Instructions:

1. Make 2 identical loops.
2. Bring the loops together, right hand loop over left hand loop.
3. Position the loops on top of each other.
4. Place both loops over post and tighten.



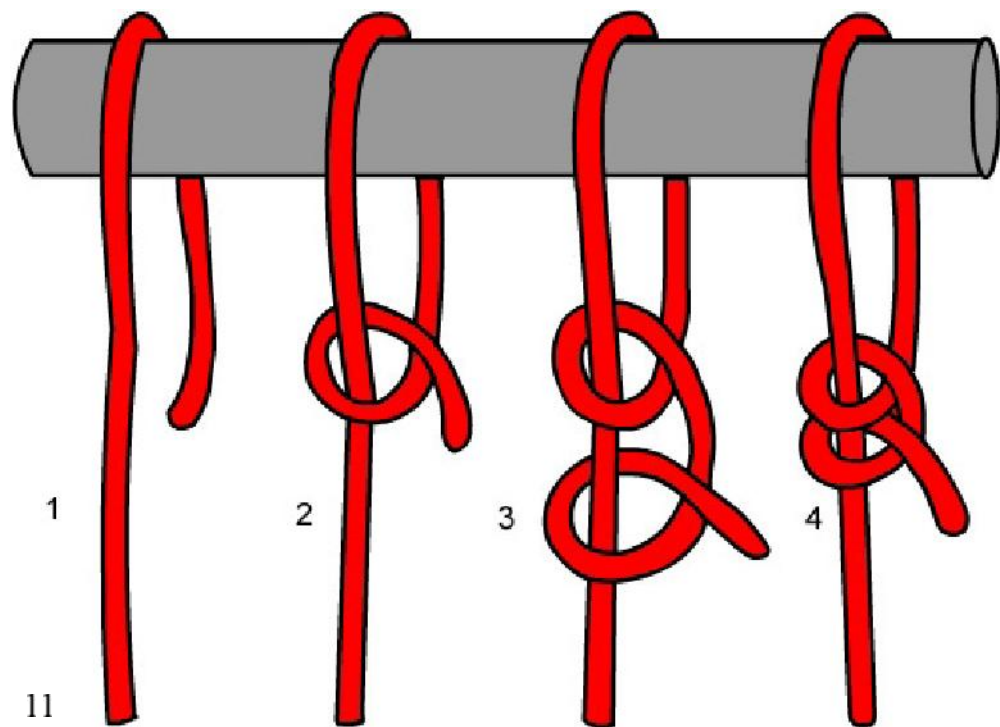
Two Half-Hitches is a binding knot consisting of an overhand knot around a post followed by a half hitch

Uses for Two Half-Hitches: Used to temporarily secure a rope to an object.

When Not to Use Two Half-Hitches: Rarely used alone as it is unsafe. More useful in a supporting role to increase the security of a primary knot.

Two Half-Hitch Instructions:

1. Wrap line on a rail
2. Loop over the top and pull through to make a Half-Hitch.
3. Make a second Half-Hitch on the outside.
4. Pull tight.



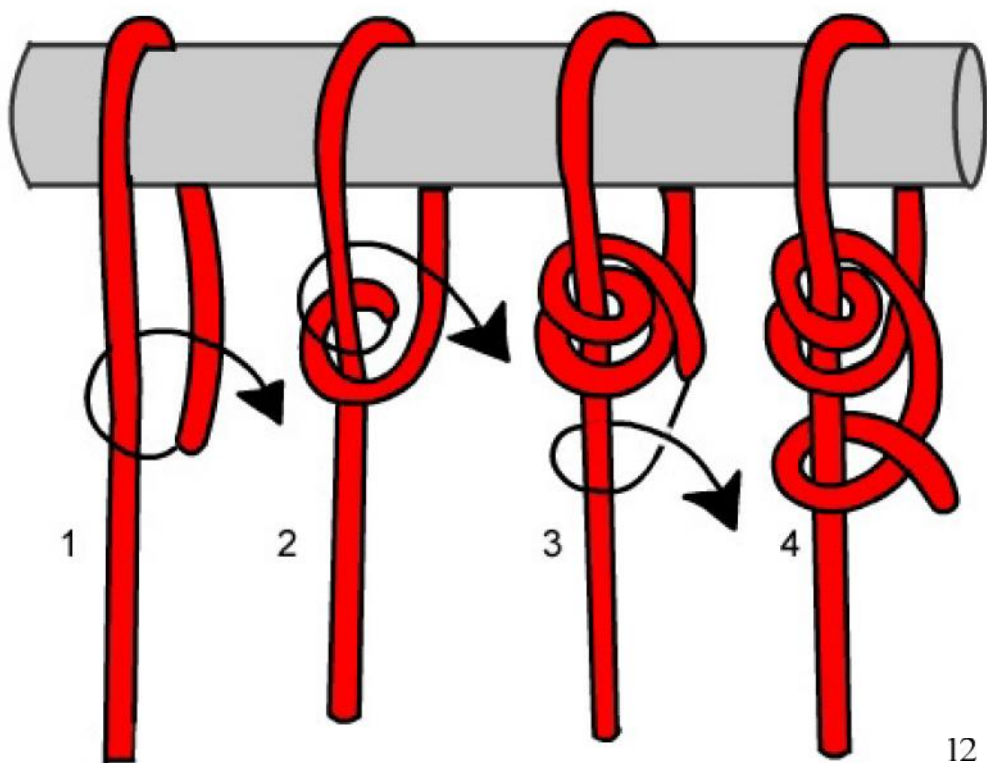
A **Taut-Line Hitch** is an adjustable loop knot for use on lines under tension. It is useful when the length of a line will need to be periodically adjusted in order to maintain tension.

Uses for a Taut-Line Hitch: It is typically used for securing tent lines in outdoor activities involving camping. It was used by space shuttle astronauts during the repair of the Hubble Space Telescope!

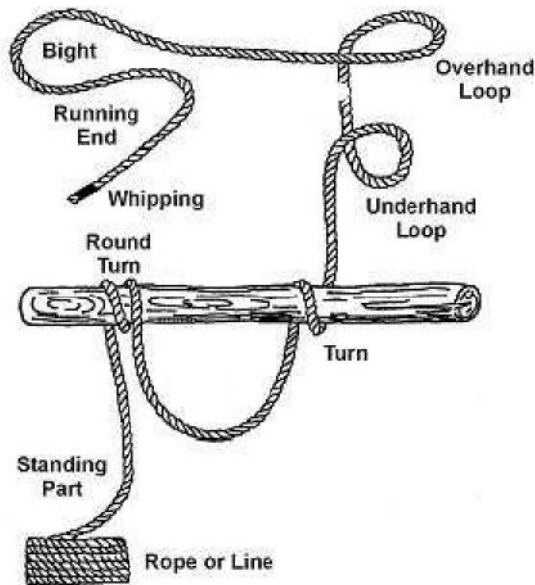
When Not to Use a Taut-Line Hitch: May not hold when using smooth polypropylene rope. In this case, follow up with a half-hitch.

Taut-Line Hitch Instructions:

1. Make a turn around a post or other object.
2. Coil the free end twice around the standing line working back toward the post.
3. Make one additional coil around the standing line on the outside of the coils just made.
4. Tighten the knot and slide it on the standing line to adjust tension.



Rope Terminology



Rope/Line: A group of yarns, plies, or strands that are twisted or braided together into a larger and stronger form

Standing Part: The section of line between knot and the standing end.

Standing End: The end of the rope not involved in making the knot, often shown as unfinished.

Turn: A single pass behind or through an object.

Round Turn: The complete encirclement of an object; requires two passes.

Overhand Loop: A full circle formed by passing the working end of a rope over itself.

Underhand Loop: A full circle formed by passing the standing end of a rope over itself.

Bight: Any curved section, slack part, or loop between the ends of a rope.

Running (Working) End: The active end of a line used in making the knot.

Whipping: A binding knot tied around the end of a rope to prevent the rope from unraveling.

Extra Credit

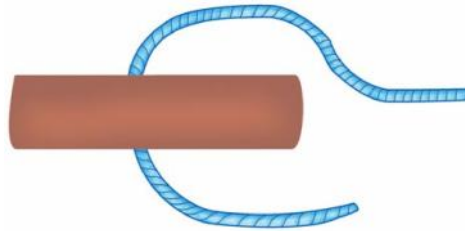
A **Timber Hitch** is a knot used to attach a single length of rope to a cylindrical object

The timber hitch is the perfect knot to use for dragging a log across the ground.

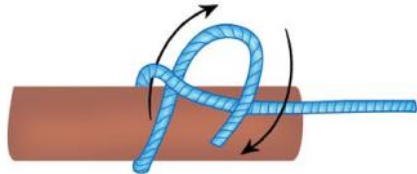
This is a very simple hitch to tie yet it is easy to untie.

It will grip harder and harder as you apply more strain.

1. Wrap the rope around the support.



2. Pass the working end around the standing part.



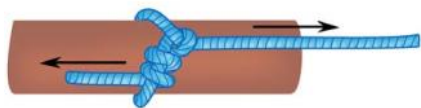
3. Pull it to the left from the loop formed.



4. Turn it around two more times.



5. Pull both ends tightly to secure.





We make it easy to get outside!