

Knots

Introduction

Paddlers need knots for a variety of purposes: tying boats to roof racks and trailers, mooring boats during lunch stops, and the critical needs of rescue in white water.

Most synthetic ropes can be used for tying boats to vehicles, and polyester yachting sheet rope makes good decklines for sea kayaks (at least 6 mm diameter, preferably 8 or 10 mm). For rescue work, floating rope is preferred, polypropylene for throwbags, Spectra with a polypropylene sheath for hauling.

All ropes should be stored in the proverbial cool, dark, dry place, loosely coiled so that air can circulate. Climbers never tread on their ropes and neither should paddlers.

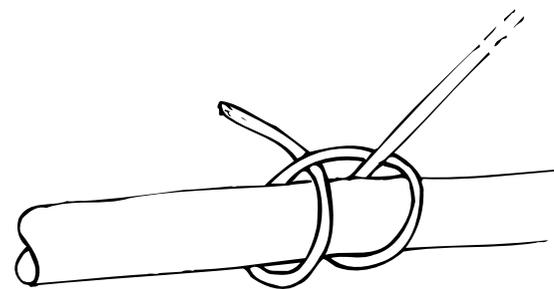
All knots weaken the rope, and the tighter the bends in the rope the more it is weakened.

Knots for tying on

Clove hitch

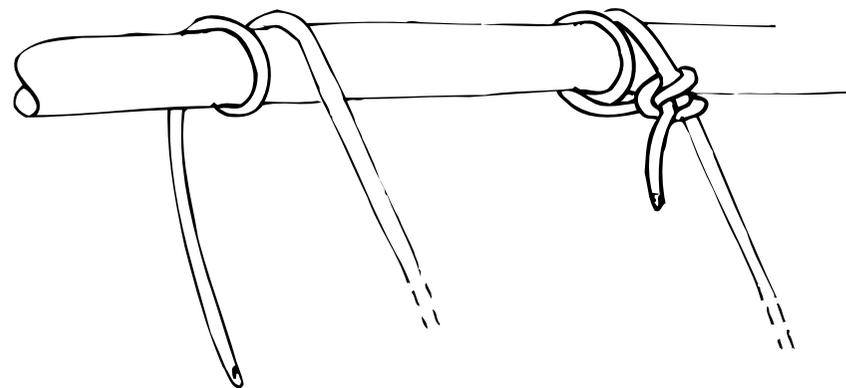
The clove hitch is suited to ties around poles where slip along the pole is not wanted. It is designed so that the rope tightens on itself and around the pole. Tension is required for an effective clove hitch. Half hitches formed by the loose end around the end with tension will make the knot more secure. If the tension is intermittent and/or the pole is slippery, the knot can work loose.

The main advantage of the clove hitch is that it can be tied when there is tension on the rope without losing the tension.



Round turn and two half hitches

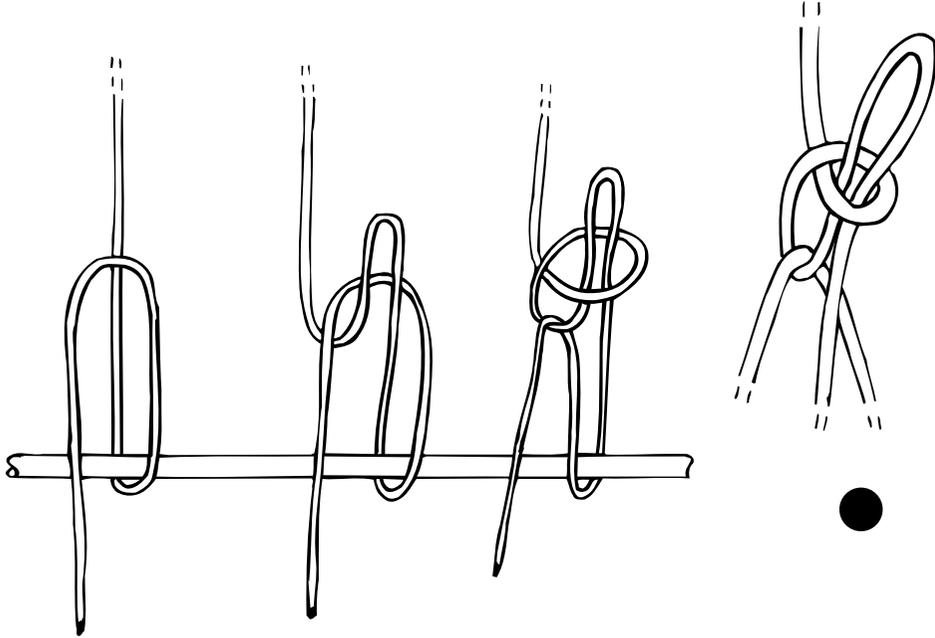
This knot is useful for tying rope already under tension around a pole, branch or roof rack. It is very simple to tie, reliable and easily undone. It is possible to retain tension during tying. The first half hitch should be tightened before the second is tied.



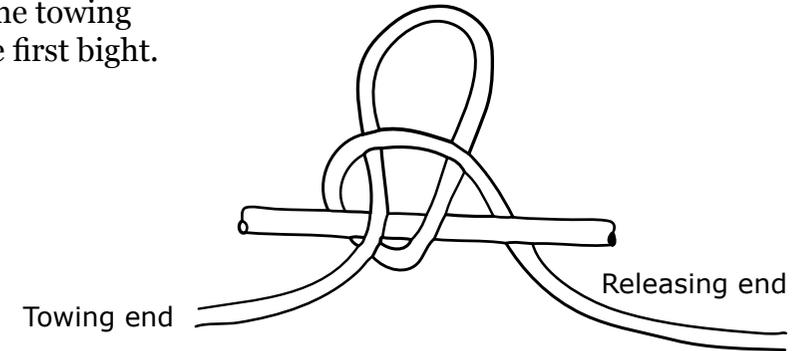
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Truckies' hitch

This knot uses half a sheepshank to make a loop to gain mechanical advantage, and is useful for securing boats to vehicles. The free end is tied off with a clove hitch or round turn and half hitches.



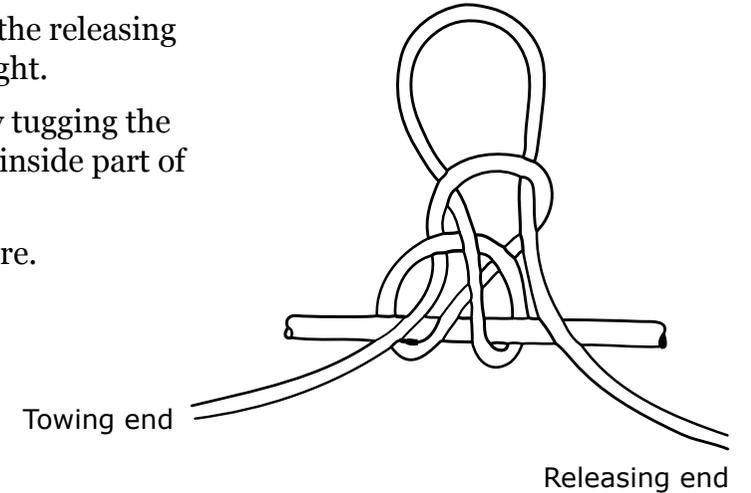
Pull a bight of the towing end through the first bight.



Now pull a bight of the releasing end through that bight.

Tighten the hitch by tugging the towing end and the inside part of the third bight.

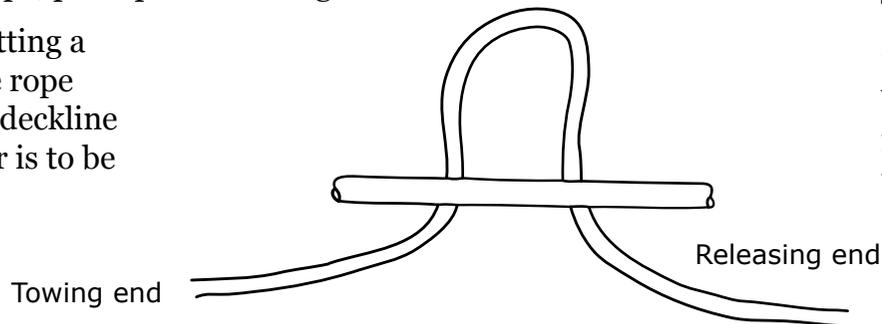
Check that it is secure.



Highwayman's hitch

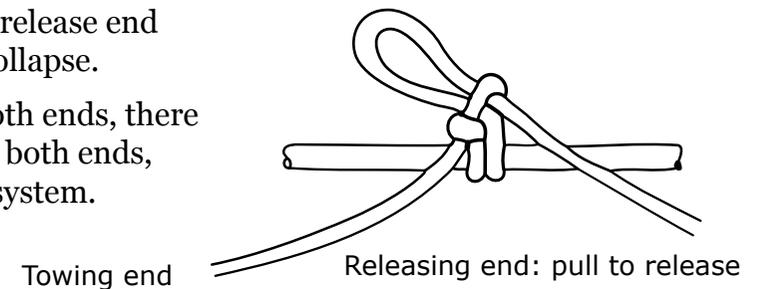
Once used to secure horses, but have them quickly released for a quick getaway, this hitch can be used to make a towline from any suitable length of rope, perhaps a throwbag.

Start by putting a bight of the rope behind the declivity or whatever is to be tied to.



To release, pull the release end and the hitch will collapse.

With the hitch at both ends, there is a quick release at both ends, useful in a towline system.



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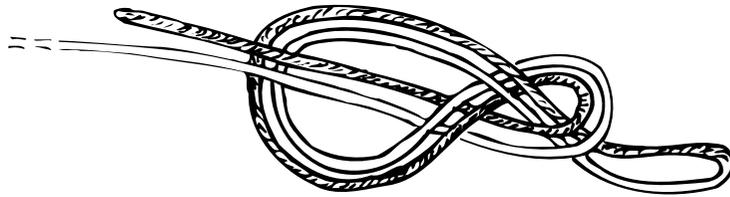
Knots for loops

Figure eight on a bight

This can be done anywhere on the rope as it doesn't require any threading through of an end. The knot will not slip even under high tension but can be undone with relative ease when tension is absent, even after large loading.

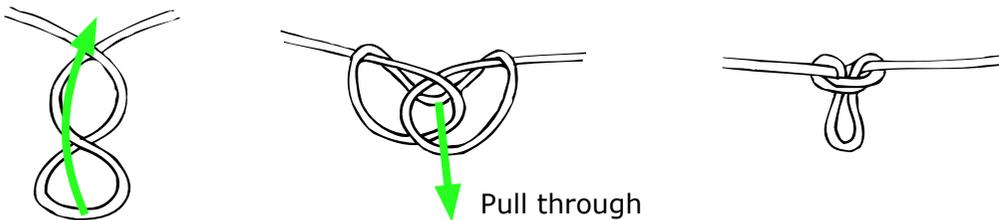
A half hitch with the loose end (if there is one) to the incoming rope helps the knot's security. Climbers depend on this knot to attach harnesses to ropes.

It is often used in place of the bowline, being stronger as well as easier.



Butterfly knot

This is a mid-line loop knot that can be loaded in any direction and is good for attaching one system to the middle of another such as pig rigs or adding vector loads onto ropes.



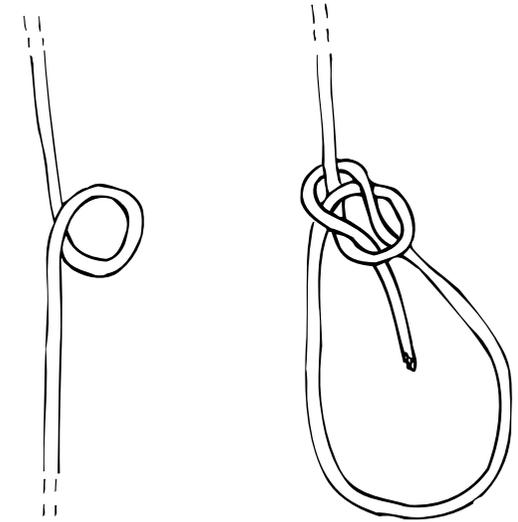
Bowline

The bowline is useful for tying around a pole or solid object. The knot will not go tight around the object so ensure that the pole or object shape will not allow escape.

Form a loop and feed the rope up through the loop, and around then back down again.

An extra half hitch with the free end will ensure that the knot won't slip. Rope which won't bend or grab easily may tend to work loose if tension is intermittent.

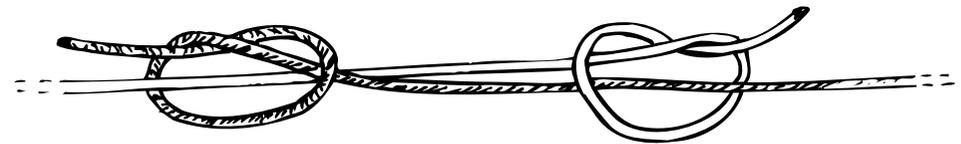
This knot is difficult to tie while holding tension.



Knots for joining

Fisherman's knot

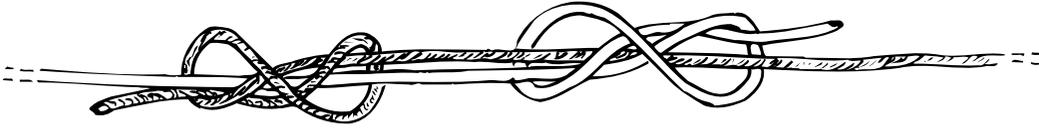
Used for joining ropes together, but not very good when the ropes are very different in diameter, and not the most secure method. Tighten the two individual knots first and pull together until the knots sit nicely together.



Knots

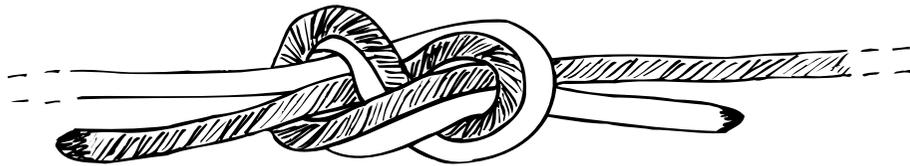
Double fisherman's

The double fisherman's knot is much more secure than the fisherman's knot for large loads. Rock climbers depend on this knot extensively, often using it to join the ends of Prusik loops. As with the fisherman's knot, both sides are tightened before being pulled together and tightened further.



Rethreaded figure eight

By forming a loose knot in one rope and then threading the end of the other through two ropes can be joined. It is easier to tie than the double fisherman's, and much easier to untie after loading.

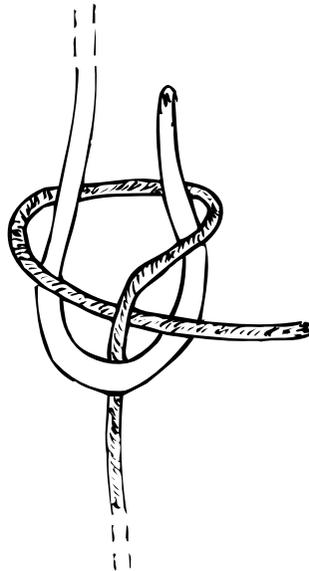


Sheet bend

A knot for joining ropes of dissimilar diameter. Form a loop with the larger rope as shown, then thread the smaller rope through.

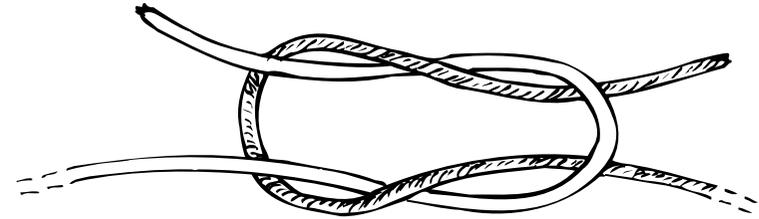
The sheet bend is not ideal for situations involving high tension, and the knot is less likely to hold great strains when the difference between the diameters of the two ropes is large.

Ensure the short ends are on the same side.



Reef knot

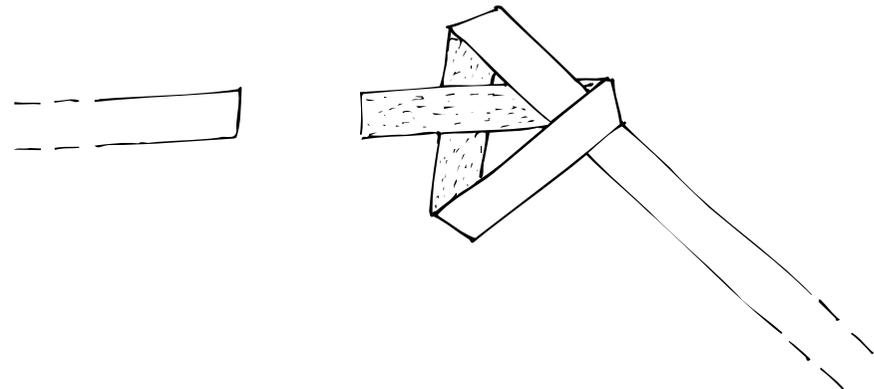
Not a good knot when the ropes are different diameters, and not ideal for large loading. It should be used only when the knot is against some surface, like the reefs in a sail. Half hitches on the loose ends can make it more secure. The ends should naturally lie along the incoming rope. If the ends point naturally to the side it is a granny's knot, and if one end is above and the other below it is a thief knot.



Tape knot

Climbing tape (or webbing) is lightweight but very strong. Lengths of tape with the ends joined make very useful slings, and are relied on extensively by rock climbers at belay stations.

If tied properly the knot will have no twists but nice flat folds at every corner. Form one end first then trace through with the other and tighten.

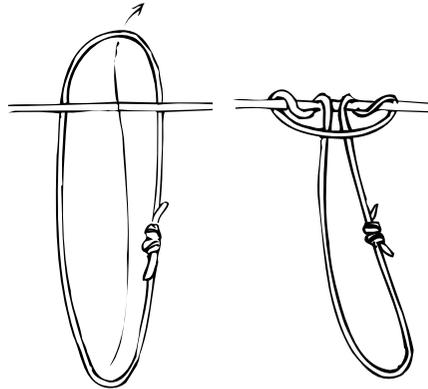


Knots

Knots that move

Prusik knot

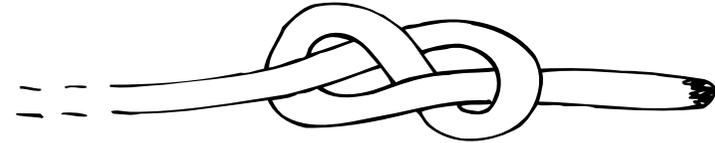
The Prusik knot, named for Dr Karl Prusik, a German climber of the 1930s, is used to attach a separate loop to a rope, so that the loop can be slid along the rope but will hold when a load is applied. The diagram shows the knot before it is tightened.



Stop knot

Figure eight knot

The standard figure eight knot makes a useful stop knot, and is easy to untie even after loading.



Acknowledgement

This resource was written and illustrated by Peter Carter.

Munter hitch

Also known as the Italian hitch, this is a hitch that can be used on a karabiner to control descent of abseilers and swimmers. The hitch can belay in both directions.

The hitch is named for Werner Munter, a Swiss mountain guide.

