

COURSE

Knots and Rope Work

10 Chapters

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KNOTS AND ROPE WORK

Contents

Chapter 1 What a Knot Is 2

Chapter 2 Rope and Cordage 7

Chapter 3 Stopper Knots 12

Chapter 4 Loops 16

Chapter 5 Bends 21

Chapter 6 Hitches 26

Chapter 7 Lashings and Splices 31

Chapter 8 Camp and Home 36

Chapter 9 Sea, Rock and Safety 41

Chapter 10 A Knot Kit 46

Knots and Rope Work

Course 1 · Chapter 1 · What a Knot Is: Words, Parts and Purpose

A knot is one of the oldest bits of technology people have. Before you learn to tie any, you need the vocabulary: what counts as a knot, how a bend or a hitch differs, and what the parts of a rope are called. Later chapters cover rope itself, then stoppers, loops, bends, hitches, lashings and the knots used at sea, in camp and on rock.

What Counts as a Knot

In everyday speech any tangle of rope is a "knot". Among people who work with rope the word is narrower, and the family of terms is worth learning at the start because instructions use them precisely.

Knot

Rope tied to itself or around itself, such as a stopper at the end of a line.

Bend

A knot that joins two ropes together, such as the sheet bend.

Hitch

A knot that ties a rope to an object, such as a post, ring or spar, and usually depends on that object to hold.

Splice

A join made by weaving the strands of rope into each other rather than tying them.

Term	Job	Example
Stopper	Stops a rope running through a hole or block	Figure-eight knot
Loop	Makes a fixed or sliding eye in a rope	Bowline
Bend	Joins two ropes	Sheet bend
Hitch	Fastens a rope to an object	Clove hitch
Lashing	Binds poles or spars together	Square lashing

Term	Job	Example
Splice	Permanent join or eye by weaving strands	Eye splice

> **The names are not perfectly consistent**
>
> Some knots are called by the "wrong" family name. The "reef knot" is really a bend (it joins two ends), and some books call the sheet bend a "weaver's knot". Treat the family as a way to think about the job, and do not worry if a traditional name does not match. (Naming habits vary between sources: check.)

The Parts of a Rope

Three words are used in almost every knot instruction. Learn them now and the later chapters read easily.

Part	Meaning
Standing part	The long, inactive part of the rope, usually the part under load or leading away from the knot
Working end	The end you are using to tie the knot (also called the running end)
Bight	A U-shaped curve in the rope where the rope does not cross itself
Loop	A curve where the rope crosses itself
Turn	The rope passed once around an object or itself
Round turn	The rope passed twice around an object
Elbow	Two crossings of the rope, like a twisted loop

```
# a rope, left to right
standing part ================== (knot) ==== working end
                                    |
```

```
                                a bight is a U-curve
                                a loop crosses itself
```

> **Practise the words with real rope**
>
> Take a length of cord, lay a bight in it, then turn the bight into a loop by crossing the rope over itself. Handling the difference once makes the words stick far better than reading them. (This is a suggestion, not something from a source.)

Why Knots Matter

A good knot does three things: it is quick to tie, it holds under the load it was chosen for, and you can untie it afterwards. No knot is best at all three, so choosing one is always a trade-off. Every knot also weakens a rope at the bend: the commonly quoted idea is that a knotted rope breaks at the knot, at a fraction of its unknotted strength, with the exact fraction depending on the knot and the rope (check).

Quality	Question to ask
Security	Will it stay tied when the load changes or the rope is shaken?
Strength	How much of the rope's strength is lost at the knot?
Ease of tying	Can I tie it quickly, even in the dark or with cold hands?
Ease of untying	Can I undo it after it has been loaded?

> **A worked trade-off**
>
> Suppose a rope is rated at 1000 units and a particular knot leaves 60% of that. The rope will then fail at about 600 units, not 1000. That is my own illustration of the idea, with an invented figure, not a measurement of any real knot.

A Short History

Rope and knots are very old, but the evidence is thin because rope rots. Cordage is often said to be many tens of thousands of years old, known mostly from impressions of twisted fibre in clay and other indirect traces (check). Knots appear in the art and records of many cultures, and sailors in particular developed a large body of them because ships needed rigging that could be tied, adjusted and untied under strain. The study of knots also became a branch of mathematics, knot theory, in the 19th century (check).

Group	Why knots mattered to them
Sailors	Rigging, sails, mooring and cargo
Climbers	Safety systems, anchors and joining ropes
Campers and scouts	Shelter, tents, lashings and camp gear
Farmers and carters	Tying loads, tethering animals
Fishers	Joining line, tying hooks and nets

Not Yet Verified, and Sources

- **Source.** This chapter is written from general knowledge of rope work and the standard terms; I did not read a specific source while writing it. Nothing here comes from a quoted text.
- **Marked (check).** Inconsistent family names, the strength lost at a knot, the age of cordage, and the date knot theory began. Look these up before relying on them.
- **Illustrations.** The 1000-unit and 60% figures are invented to show the idea.

Exercises

EXERCISE 1

Name the family (knot, bend, hitch, splice or lashing) for each job: joining two ropes, tying a rope to a post, binding two poles at a right angle, and weaving a permanent eye into a rope end.

→ Solution

EXERCISE 2

With a piece of cord, make a bight, then a loop, then a turn and then a round turn around a chair leg. Write one sentence for each saying how you could tell it from the one before.

→ Solution

EXERCISE 3

A rope is rated at 800 units. If a knot leaves 65% of its strength, what load will the knotted rope fail at? Then name which of the four qualities (security, strength, ease of tying, ease of untying) matters most for a washing line, and explain why.

→ Solution

Quick Reference

- **Knot · bend · hitch · splice:** tied to itself · joins two ropes · fastens to an object · woven join
- **Standing part:** the long inactive part
- **Working end:** the end you tie with
- **Bight · loop · turn · round turn:** U-curve · crossing curve · once around · twice around
- **Judge a knot by:** security, strength, ease of tying and untying
- **Check:** family names, strength loss, history dates

Coming next

Chapter 2 looks at the rope itself: fibres, laid and braided construction, care, and how to stop the ends fraying.

Knots and Rope Work

Course 1 · Chapter 2 · Rope and Cordage: Fibres, Construction and Care

A knot is only as good as the rope it is tied in. Different fibres grip, stretch, float and rot differently, and the way a rope is built changes how it handles. This chapter covers the common fibres, the two main constructions, how to look after rope, and how to stop a cut end unravelling.

Fibres

Rope is made by twisting or braiding fibres. Natural fibres were the only choice for most of history; synthetic ones now dominate. The notes below are general characteristics, and individual products vary (check the maker's label).

Fibre	Type	General character
Manila / sisal / hemp	Natural	Good grip, little stretch, rough on the hands, rots if stored wet
Cotton	Natural	Soft and easy to handle, weaker, rots if left damp
Nylon (polyamide)	Synthetic	Strong and stretchy, absorbs shock, sinks
Polyester	Synthetic	Strong, low stretch, good in sunlight
Polypropylene	Synthetic	Light, floats, cheap, weakens in sunlight, can be slippery

Not every rope suits every job

Ordinary rope from a hardware shop is not rated for lifting people or for climbing. Rope for safety work is made and tested to a standard and sold for that purpose. Never improvise with general-purpose cord where a fall is possible. (Standards and labelling differ by country: check.)

Laid and Braided Rope

Laid (twisted) rope

Braided rope

Fibres are twisted into yarns, yarns into strands, and (usually three) strands are twisted together in the opposite direction. The counter-twist is what holds the rope together. It is easy to splice but can kink and untwist.

Strands are plaited rather than twisted. It tends to be smoother, kinks less and handles well, but is harder to splice. Many modern ropes have a braided cover over a core.

```
# how a three-strand laid rope is built
fibres  -> twisted one way          -> yarn
yarns   -> twisted the other way    -> strand
strands -> twisted the first way    -> rope
# each layer twists against the last, so the rope locks itself
```

Feature	Laid	Braided
Splicing	Easy	Harder, needs a method for the rope type
Kinking	More likely	Less likely
Feel	Coarser, grippy	Smoother
Inspecting for damage	Strands visible	Core is hidden by the cover

Reading a laid rope

Most laid rope is "right-hand lay", meaning the strands spiral up and to the right when you look along it, much like a standard screw thread. Coil it clockwise so the twist is not fought. (Common practice, not checked against a source.)

Strength and Stretch

Rope is described by diameter, material and a breaking strength, with a much lower working load limit recommended for everyday use so there is a margin for wear, knots and shock. The breaking strength is for a new rope in a straight pull, and, as Chapter 1 explained, knots reduce it. Stretch matters too: a stretchy rope such as nylon absorbs sudden loads, while a low-stretch rope is better when you need a firm, steady line.

A worked margin

Suppose a rope has a breaking strength of 1200 units and the maker advises a safety factor of 6 for general use. The suggested working load is then 1200 / 6 = 200 units. Both numbers are invented to show the arithmetic, not taken from a real product.

Care and Inspection

- **Keep it dry and aired.** Coil loosely and hang to dry before storing, especially natural fibres.
- **Avoid chemicals and heat.** Fuel, acids and strong cleaners can weaken fibres. Friction heat can melt synthetics.
- **Protect from sunlight.** Prolonged ultraviolet light weakens many synthetics.
- **Avoid sharp edges.** Pad corners or use a sleeve.
- **Inspect before use.** Look and feel along the length for cuts, flat or stiff patches, fuzzing, discolouration and a core that feels uneven.
- **Retire it when in doubt.** A damaged rope is demoted to light jobs or thrown away.

Whipping the Ends

A cut rope end frays quickly. A whipping binds the end with a small cord so it stays neat. Synthetic rope can also be sealed with careful heat, which fuses the fibres, but whipping works on all types and is the traditional method.

1. Lay a loop of thin whipping twine along the rope with the loop's end sticking out past the rope end.
2. Wind the twine tightly around the rope and over the laid-down loop, working towards the rope end, for a length about equal to the rope's width.
3. Pass the free end of the twine through the loop.
4. Pull the other end of the twine so the loop is drawn under the whipping and disappears.
5. Trim both ends of the twine neatly.

```
# common whipping, side view
rope =======[||||||||]--> cut end
             ^ turns bind the end
```

```
length of whipping ~ width of the rope
pull the loop's tail to bury the twine under the turns
```

Heat sealing

If you seal a synthetic end with a flame or hot blade, do it outdoors or with good ventilation, keep hands clear of the molten end, and let it cool before touching. (A safety suggestion, not from a source.)

Not Yet Verified, and Sources

- **Source.** Written from general knowledge of rope and cordage; no specific source was read, and nothing is quoted from a text.
- **Marked (check).** Fibre characteristics for particular products, safety standards and labelling, and the lay-direction convention. Check the maker's information and local standards.
- **Illustrations.** The 1200-unit and factor-of-6 figures are invented.

Exercises

EXERCISE 1

Choose a suitable fibre from the table for each: a washing line left outdoors all summer, a rope that must float on a pond, and a rope that must absorb a sudden jerk. Give a reason each time.

→ Solution

EXERCISE 2

Find a rope or cord at home. Say whether it is laid or braided, guess its fibre from the feel, and inspect it using the care checklist. Write down what you found and whether you would trust it for a heavy load.

→ Solution

EXERCISE 3

A rope has a breaking strength of 900 units and a recommended safety factor of 5. What is the suggested working load? Then whip the cut end of a piece of cord using the steps above, and list what went wrong or right.

→ Solution

Quick Reference

- **Natural:** manila, sisal, hemp, cotton: grip, rot if damp
- **Synthetic:** nylon (stretchy), polyester (low stretch), polypropylene (floats)
- **Laid:** twisted strands, easy to splice. **Braided:** smoother, kinks less
- **Working load:** breaking strength divided by the safety factor
- **Care:** dry, clean, out of sunlight, away from edges, inspect first
- **Whipping:** binds a cut end, length about the rope's width

Coming next

Chapter 3 begins the knots themselves with stoppers: the overhand and figure-eight, and what stoppers are for.

Knots and Rope Work

Course 1 · Chapter 3 · Stopper Knots: Overhand, Figure-Eight and Their Jobs

A stopper knot is a bulge tied in the end of a rope. It keeps the end from slipping through a hole, a pulley or your own grip, and it stops the rope unravelling a little. Stoppers are the simplest knots there are, which makes them the best place to start tying.

What Stoppers Are For

- **Stopping a line running out** through a block, a ring or a hole.
- **Marking the end** of a rope so you can feel it in the dark or with gloves on.
- **Preventing a fray** for a while when you cannot whip the end.
- **Giving a grip** or a handhold, for example on a pull cord.
- **Backing up another knot** by tying a stopper in the tail so it cannot work free.

The Overhand Knot

The overhand is the simplest knot: one crossing, one tuck. It is quick, but it jams tight when loaded and can be hard to untie afterwards.

1. Make a loop by crossing the end over the standing part.
2. Pass the end under and up through the loop.
3. Pull both ends to snug it down.

```
# overhand knot, in words
1. cross the end over the standing part   (makes a loop)
2. tuck the end through the loop
3. pull tight

# result: a small, tight knot that can jam
```

> **Why it jams**
>
> The overhand squeezes itself as the load grows, and the rope bends sharply inside it. That is useful for a quick temporary stopper and a nuisance when you want to untie it. (General

observation, not checked against a source.)

The Figure-Eight Knot

The figure-eight is the standard stopper. It is the overhand with one extra turn, which makes a bigger, more rounded bulge that holds well and is much easier to untie after a heavy load.

1. Make a loop by crossing the end over the standing part.
2. Take the end around behind the standing part.
3. Bring the end back over the front and down through the loop.
4. Pull snug. The knot should look like a figure eight on one side.

```
# figure-eight knot, in words
1. cross the end over the standing part   (makes a loop)
2. take the end round behind the standing part
3. bring it forward and down through the loop
4. pull tight

# result: a larger stopper, easier to untie than the overhand
```

Feature	Overhand	Figure-eight
Turns in the knot	One crossing	One crossing plus a half turn more
Size of bulge	Small	Larger
Untying after load	Often hard	Usually easier
Best use	Quick, temporary	Standard stopper, backing up other knots

Choosing and Using a Stopper

- **Size the stopper to the hole.** The knot must be clearly bigger than the gap it is meant to block. A thin rope may need a double or stacked stopper.
- **Leave a tail.** Do not tie right at the very end; leave a few finger-widths so the knot cannot slip off as it tightens.

- **Dress the knot.** Make sure the strands lie neatly side by side, then pull snug before use.
- **Check it again.** Stoppers can work loose in slippery synthetic rope if they are not pulled firmly.

A stopper is not a safety device

A stopper knot can stop a line running out of a pulley, but do not rely on one alone where a person's weight or a fall is involved. Safety work needs the methods and equipment covered in Chapter 9. (Guidance for safety-critical use differs by activity: check.)

Not Yet Verified, and Sources

- **Source.** Written from general knowledge of common knot practice; no specific source was read, and nothing is quoted from a text.
- **Marked (check).** Claims about jamming and ease of untying, and any guidance for safety-critical use.
- **Descriptions.** The steps are written in words; follow them with a real piece of rope and adjust to what you see in your hands.

Exercises

EXERCISE 1

Tie an overhand knot in a piece of cord, pull it tight, then try to untie it. Do the same with a figure-eight. Write down which was easier to untie and which bulge was bigger.

→ Solution

EXERCISE 2

Thread a cord through a hole or ring about the size of a coin. Choose and tie a stopper that will not pull through, and test it. Explain what you would change if the hole were twice as wide.

→ Solution

EXERCISE 3

List three everyday places where a stopper knot is used (for example a zip pull or a blind cord). For each, say which stopper you would choose and why.

→ Solution

Quick Reference

- **Stopper:** a bulge in the end of a rope that stops it passing through
- **Overhand:** one crossing and a tuck, quick, can jam
- **Figure-eight:** overhand plus a turn, bigger and easier to untie
- **Leave a tail** and pull the knot snug
- **Not a safety device** on its own

Coming next

Chapter 4 moves on to loops: the bowline, the figure-eight loop and the alpine butterfly.

Knots and Rope Work

Course 1 · Chapter 4 · Loops: Bowline, Figure-Eight Loop and Alpine Butterfly

A fixed loop is a loop that keeps its size however you pull on it. Loops let you hang a rope on a post, clip it to a ring, or give someone a handle. Three loops cover most needs: the bowline at the end of a rope, the figure-eight loop for a heavier or more trusted job, and the alpine butterfly for a loop in the middle.

What Makes a Good Loop

- **It does not slip.** The loop stays the same size under load, unlike a slip knot or noose.
- **It unties afterwards.** A good loop can still be undone after taking a heavy load.
- **It is easy to check.** You can see at a glance whether it is tied correctly.
- **It suits the place.** Some loops go in the end, some in the middle, and a few can be tied around an object.

The Bowline

The bowline is the classic end loop, popular on boats and around the home. It is quick to tie, holds well under steady load and usually unties easily. A well-known weakness is that it can work loose if the rope is shaken, slack or loaded from the wrong side. (Details of its failure modes: check.)

1. Make a small loop in the standing part, with the end on top. This loop becomes the "rabbit hole".
2. Pass the end up through the little loop, as if the rabbit comes out of the hole.
3. Take the end behind the standing part, the "tree".
4. Bring it back down into the little loop, the way it came out.
5. Hold the end and the loop strand together, and pull the standing part to snug the knot.

```
# bowline, in words (the rabbit story)
1. make a small loop in the standing part, end on top    (the hole)
2. pass the end up through the hole                       (rabbit out)
3. take the end behind the standing part                (round the tree)
4. bring the end back down the hole                      (rabbit in)
```

```
5. pull the standing part to tighten

# result: a fixed loop in the end of the rope
```

> **Leave a tail**
>
> Tie a stopper in the tail, or at least leave a generous tail past the knot, so the bowline cannot shake loose. Backing up a knot with a stopper is the habit from Chapter 3.

The Figure-Eight Loop

The figure-eight loop is the figure-eight stopper from Chapter 3, tied as a loop. It is bulkier than the bowline, but it is very easy to check by eye and is less likely to loosen, which is why it is common where a mistake would matter. It is tied either "on the bight" (a doubled section of rope) or by retracing the figure-eight around an object.

1. Double the rope to make a bight, about a hand's length long.
2. Treat the bight as a single strand and tie a figure-eight with it.
3. Check that the two strands lie side by side, never crossed.
4. Pull snug. The bight is now your loop.

```
# figure-eight loop (on the bight), in words
1. fold the rope to make a doubled section (a bight)
2. tie a figure-eight, using both strands as one
3. check the strands run parallel, not crossed
4. pull snug

# result: a fixed loop, easy to inspect, slightly bulky
```

The Alpine Butterfly

The alpine butterfly makes a fixed loop in the middle of a rope without needing to reach an end. It can be loaded in several directions, and is used to isolate a worn or damaged patch of rope or to add a clip-in point partway along a line. (Specific uses in climbing and rescue: check.)

1. Make a loop in the middle of the rope, then twist it over to make a second crossing.
2. Fold the top of the loop down behind the crossing.
3. Bring the folded part up through the gap at the front.
4. Pull the new loop and both ends to tighten.

```
# alpine butterfly, in words
1. make a loop in the middle, twist it once to cross
2. fold the top of the loop down behind the crossing
3. bring the folded part up through the front gap
4. pull the loop and both ends snug

# result: a fixed loop mid-rope, loadable along the line
```

Loop	Where tied	Strength	Weakness
Bowline	End of rope	Quick, unties easily	Can shake loose
Figure-eight loop	End of rope, or on a bight	Easy to check, secure	Bulky, harder to untie
Alpine butterfly	Middle of rope	Needs no free end	Takes practice to tie neatly

> **Loops and people**
>
> A loop tied for practice is not safe to trust with a person's weight. Anything where a fall or injury is possible needs proper instruction and equipment, which Chapter 9 introduces. (Whether each loop is accepted for a given activity: check.)

Not Yet Verified, and Sources

- **Source.** Written from general knowledge of common knot practice; no specific source was read, and nothing is quoted from a text.
- **Marked (check).** The bowline's failure modes, climbing and rescue uses of the butterfly, and what each loop is accepted for.
- **Descriptions.** The steps are in words and the "rabbit" story is only one of several mnemonics. Follow with real rope and adjust to what you see.

Exercises

EXERCISE 1

Tie a bowline around a chair leg or post. Load it by pulling steadily, then shake the rope while it is slack. Does it hold its shape? Write down what you notice and how a stopper in the tail changes things.

→ Solution

EXERCISE 2

Tie a figure-eight loop on the bight and a bowline in similar cord. Compare how easy each is to check by eye, and how hard each is to untie after pulling hard.

→ Solution

EXERCISE 3

Tie an alpine butterfly in the middle of a length of cord. Hook a finger through the loop and pull in three directions: along the rope each way and out sideways. Describe what happens, and name one job where a mid-rope loop is useful.

→ Solution

Quick Reference

- **Fixed loop:** a loop that keeps its size under load
- **Bowline:** quick end loop, unties easily, can shake loose
- **Figure-eight loop:** secure, easy to inspect, bulky
- **Alpine butterfly:** a loop in the middle of a rope
- **Back up** with a tail or stopper; practice loops are not for people's weight

Coming next

Chapter 5 moves on to bends: joining two ropes with the reef knot, the sheet bend and the double fisherman's.

Knots and Rope Work

Course 1 · Chapter 5 · Bends: Reef Knot, Sheet Bend and Double Fisherman's

A bend joins two ropes together. Chapter 1 drew the line between a bend and other knots; here are three bends worth knowing. Each suits a different job, and each has a known weakness. Choosing the right bend matters more than tying any one of them quickly.

What Makes a Good Bend

- **It holds both ropes.** Neither rope should pull out of the knot under load.
- **It suits the ropes.** Ropes of different thickness, stiffness or material behave differently in the same bend.
- **It unties afterwards.** A bend that jams solid is a problem when you need the rope back.
- **It is easy to check.** A symmetrical, tidy knot is easier to trust than a tangled one.

The Reef Knot

The reef (square) knot is two overhand knots tied one on top of the other, the second in the opposite direction. It is flat and quick, and is good for tying a bundle, a bandage or a parcel. It is **not a safe bend** for joining two ropes under load: it can capsize and slip if the ropes differ or the load is uneven. (Its history and failure modes: check.)

1. Take one end in each hand. Cross the right end over the left and tuck it under, as for the first half of a shoelace knot.
2. Now cross the left end (which is now on the right) over the other end.
3. Tuck it under, so each end emerges on the same side as its own standing part.
4. Pull snug. The knot should lie flat and symmetrical.

```
# reef knot, in words ("right over left, left over right")
1. right end over left, and tuck under      (first half)
2. left end over right, and tuck under      (second half)
3. check both ends sit beside their own rope
4. pull snug

# if the ends cross the wrong way you have tied a granny knot
```

Granny knots and weak joins

Tying the same direction twice gives a granny knot, which slips and jams. Even a correct reef knot should not join ropes that matter, such as anything carrying a person or a heavy load. Use a sheet bend or double fisherman's instead.

The Sheet Bend

The sheet bend joins two ropes, and is especially good when they are **different thicknesses** or one is stiffer than the other. The thicker or stiffer rope forms the bight, and the thinner one is woven through it. It is easy to tie and untie, and the "double sheet bend" (an extra turn) is more secure for very unequal ropes. (Exact security compared with other bends: check.)

1. Make a bight (a U-shaped loop) in the end of the thicker rope.
2. Pass the end of the thinner rope up through the bight.
3. Take it round behind both strands of the bight.
4. Tuck it under itself, on the side where it came up.
5. Pull both standing parts to tighten, keeping both short ends on the same side.

```
# sheet bend, in words
1. make a bight in the thicker rope
2. pass the thinner rope up through the bight
3. take it round behind both strands of the bight
4. tuck it under its own standing part
5. pull the two standing parts to tighten

# tip: both short ends should lie on the same side of the knot
```

The Double Fisherman's

The double fisherman's bend is made of two double overhand knots, each tied round the other rope, which then slide together. It grips tightly and is trusted for joining two ropes of similar thickness, including in climbing. It is bulky and can jam hard after heavy load. (Climbing practice: check.)

1. Lay the two rope ends side by side, pointing in opposite directions.
2. Tie a double overhand with one end, wrapped twice around the other rope.
3. Do the same with the other end, wrapping round the first rope.
4. Pull each standing part so the two knots slide together and meet.

```
# double fisherman's, in words
1. lay the ends side by side, pointing opposite ways
2. tie a double overhand with end A round rope B
3. tie a double overhand with end B round rope A
4. pull the standing parts; the two knots slide together

# result: a compact, strong join; may jam after heavy load
```

Bend	Best for	Strength	Weakness
Reef knot	Bundles, bandages, parcels	Flat, quick	Unsafe as a load-bearing join
Sheet bend	Ropes of different thickness	Easy to tie and untie	Can loosen if slack or shaken
Double fisherman's	Ropes of similar thickness	Grips tightly	Bulky, can jam hard

> **Leave long tails**
>
> Whatever bend you choose, leave generous tails past the knot and back it up with a stopper where it matters. Bends can creep if the ropes are slippery or the load comes and goes.

Not Yet Verified, and Sources

- **Source.** Written from general knowledge of common knot practice; no specific source was read, and nothing is quoted from a text.
- **Marked (check).** The reef knot's history and failure modes, the sheet bend's relative security, and climbing practice for the double fisherman's.

- **Descriptions.** The steps are in words. Follow them with real rope and adjust to what you see.

Exercises

EXERCISE 1

Tie a reef knot in a length of cord, then deliberately tie a granny knot. Compare how they look, then pull each hard and try to untie them. Write down the differences.

→ Solution

EXERCISE 2

Join a thick cord to a thin cord with a sheet bend. Then try the same join with a reef knot and pull both gently. Which holds better, and why?

→ Solution

EXERCISE 3

Tie a double fisherman's between two cords of similar thickness. Pull hard, then try to untie it. Describe how it behaves, and name a job where a bend that grips this tightly is useful.

→ Solution

Quick Reference

- **Bend:** a knot that joins two ropes
- **Reef knot:** flat and quick; for bundles, not for load-bearing joins
- **Sheet bend:** best for ropes of different thickness
- **Double fisherman's:** strong join for similar ropes; may jam

- **Always** leave tails and check the knot before trusting it

Coming next

Chapter 6 moves on to hitches: tying a rope to a post, ring or another object with the clove hitch, the round turn and two half hitches, and the taut-line hitch.

Knots and Rope Work

Course 1 · Chapter 6 · Hitches: Clove Hitch, Round Turn and Two Half Hitches, Taut-Line

A hitch ties a rope to something else: a post, a ring, a rail or a tree. Unlike a loop or a bend, a hitch usually depends on the object it is tied to, and often needs tension to hold. This chapter covers three hitches that between them handle most everyday jobs.

What Makes a Good Hitch

- **It grips the object.** Friction against the post or rail does part of the work.
- **It suits the load.** Some hitches hold a steady pull; others can work loose if the pull comes and goes.
- **It can be adjusted or released.** Many jobs need a hitch you can slide or untie after a load.
- **It is backed up where it matters.** A spare half hitch or stopper adds a margin of safety.

The Clove Hitch

The clove hitch is two turns round an object, the second crossing over the first and tucked under itself. It is quick to tie and adjust, and can be tied in the middle of a rope as well as at the end. Its weakness is that it can **work loose or roll** if the pull is uneven or keeps changing, so it is best as a quick, temporary hitch or with a back-up. (Reliability under varying load: check.)

1. Pass the rope round the post and cross over the standing part.
2. Take it round the post a second time, in the same direction.
3. Tuck the end under the second turn, next to the first crossing.
4. Pull both ends so the two turns bite and sit neatly side by side.

```
# clove hitch, in words
1. round the post, crossing over the standing part
2. round the post again, same direction
3. tuck the end under the second turn
4. pull snug; the two turns sit side by side

# tip: add a half hitch on the end to back it up
```

A clove hitch is not a safe lifeline

It can slip or capsize under uneven or changing load. Do not trust it alone for anything that matters, such as holding a person or a heavy weight. Back it up or choose a different hitch.

Round Turn and Two Half Hitches

A round turn takes the rope fully round the object once or twice before any knotting, which spreads the load and takes much of the strain off the knot. Two half hitches then lock it. The result is secure, holds a steady or changing pull, and can be untied after a load. It is a dependable choice for tying a boat to a ring or a load to a post. (Typical uses: check.)

1. Pass the rope fully round the post (or ring) so it makes a complete turn, and pull it snug.
2. Take the end round the standing part and tuck it through, making the first half hitch.
3. Repeat in the same direction to make the second half hitch.
4. Slide the half hitches up against the post and pull snug.

```
# round turn and two half hitches, in words
1. one full turn round the post; hold the load on it
2. half hitch round the standing part
3. second half hitch, same direction
4. slide hitches up to the post; pull snug

# the round turn takes the strain; the hitches lock it
```

The Taut-Line Hitch

The taut-line hitch is an adjustable hitch for a rope under tension, such as a tent guy line. It is tied on the standing part with a few turns inside a loop, and it grips when loaded but can be slid up or down when the load is eased. This lets you tighten or loosen a line without untying it. It works best on rope with some grip; very slippery rope may creep. (Rope suitability: check.)

1. Pass the end round the post or peg and back along the standing part.

2. Make two turns round the standing part, working towards the post, inside the loop you just made.
3. Make a third turn on the outside of those two, then tuck the end through to finish.
4. Slide the hitch along the standing part to adjust the tension, then let it grip.

```
# taut-line hitch, in words
1. end round the peg and back along the standing part
2. two turns inside the loop, towards the peg
3. a third turn outside the loop, then tuck and finish
4. slide to adjust; the load makes it grip

# use on guy lines and anything that needs re-tensioning
```

Hitch	Best for	Strength	Weakness
Clove hitch	Quick, temporary ties; mid-rope	Fast to tie and adjust	Can slip or roll under uneven load
Round turn and two half hitches	Securing to a ring or post	Dependable and releasable	Slower to tie
Taut-line hitch	Adjustable tension, such as guy lines	Slides to adjust, grips when loaded	May creep on slippery rope

Back it up

A half hitch or two on the tail turns a quick hitch into a safer one. When in doubt, add the back-up and leave a generous tail.

Not Yet Verified, and Sources

- **Source.** Written from general knowledge of common knot practice; no specific source was read, and nothing is quoted from a text.
- **Marked (check).** The clove hitch's reliability under varying load, typical uses of the round turn and two half hitches, and which ropes suit the taut-line hitch.

- **Descriptions.** The steps are in words. Follow them with real rope and adjust to what you see.

Exercises

EXERCISE 1

Tie a clove hitch round a chair leg or broom handle. Pull on the rope from different angles and with a slack pull that you then repeat. Write down when it holds and when it moves, then add a half hitch as a back-up and test again.

→ Solution

EXERCISE 2

Tie a round turn and two half hitches round a post or railing and hang a light weight from it. Then untie it. Compare how it feels to untie with a clove hitch under the same load.

→ Solution

EXERCISE 3

Tie a taut-line hitch on a line stretched between a peg (or chair) and a fixed point. Tighten it, loosen it, then tighten it again without untying. Describe what makes it grip and when it slips.

→ Solution

Quick Reference

- **Hitch:** a knot that ties a rope to an object
- **Clove hitch:** quick and adjustable; back it up
- **Round turn and two half hitches:** dependable and releasable

- **Taut-line hitch:** adjustable, grips under load
- **Always** leave a tail and test before trusting a hitch

Coming next

Chapter 7 moves on to lashings and splices: binding poles together with square and diagonal lashings, and the basics of an eye splice.

Knots and Rope Work

Course 1 · Chapter 7 · Lashings and Splices: Square, Diagonal and the Eye Splice

So far each knot has joined a rope to itself, another rope or a single object. A lashing binds two or more poles together with many turns of rope, and a splice weaves rope strands into each other to make a permanent loop or join with no knot at all. This chapter covers two lashings and the basics of an eye splice.

What a Lashing Is

- **It starts and ends with a hitch.** Usually a clove hitch round one pole, so the turns have something to grip.
- **The turns do the holding.** Several wraps spread the load, and friction between rope and wood keeps them tight.
- **Frapping tightens it.** Turns pulled across the wraps squeeze them together and stop them loosening.
- **It suits poles, not people.** Lashings are for camp gadgets, frames and simple structures, not for anything life-critical.

The Square Lashing

A square lashing joins two poles that cross at right angles, such as the upright and rail of a simple frame. The wraps go round both poles, and frapping turns between the poles pull them tight against each other. Natural fibre rope such as manila or sisal grips wood well. (Best rope for lashings: check.)

1. Tie a clove hitch round the upright, just under where the rail crosses it.
2. Wrap the rope over the rail, behind the upright, under the rail and back in front of the upright. Repeat three or four times, keeping the turns neat and side by side.
3. Make two or three frapping turns round the wraps, between the poles, pulling hard so the wraps tighten.
4. Finish with a clove hitch round the rail or upright and tuck the end out of the way.

```
# square lashing, in words
1. clove hitch on the upright, below the rail
```

```
2. 3-4 wraps round both poles, side by side
3. 2-3 frapping turns between the poles; pull hard
4. finish with a clove hitch; tuck the end

# wraps hold the poles; frapping makes them tight
```

The Diagonal Lashing

A diagonal lashing joins two poles that cross at an angle other than a right angle, and is used where poles need to brace against each other, such as the cross of an A-frame. The poles tend to spring apart, so a first set of turns pulls them together before the wraps go on. (Typical uses: check.)

1. Tie a timber hitch (or a clove hitch) round both poles where they cross.
2. Make three or four wraps round both poles across one diagonal, pulling them tight.
3. Make three or four wraps across the other diagonal, so the two sets cross over each other.
4. Make two frapping turns between the poles, then finish with a clove hitch on one pole.

```
# diagonal lashing, in words
1. hitch round both poles where they cross
2. 3-4 wraps across one diagonal; pull tight
3. 3-4 wraps across the other diagonal
4. frap between the poles; finish with a clove hitch

# the first wraps draw the poles together
```

> **Test a lashed frame before trusting it**
>
> A lashing holds because it is tight. Push and pull the frame gently before leaving it, and never stand, climb or hang on a camp structure you have not tested at a low height first.

The Eye Splice

A splice joins rope by weaving its own strands together instead of tying a knot. An eye splice makes a fixed loop in the end of a rope, and a good one is neater and usually stronger than the

equivalent knotted loop. It is done on laid (twisted three-strand) rope, as described in an earlier chapter, because the strands can be opened and tucked. (Strength compared with knots: check.)

1. Whip or tape the rope end so it does not unravel, then unlay the strands for a few turns.
2. Bend the rope round to form the eye, laying the three loose strands against the standing part where you want the eye to end.
3. Tuck the middle strand under one strand of the standing part, against the lay of the rope, and pull snug.
4. Tuck each of the other two strands under a different strand of the standing part, so every end goes under a strand of its own.
5. Continue tucking each strand over one and under one, for at least three full rounds, pulling snug each time.
6. Roll the splice under your foot and trim the ends, leaving a short tail.

```
# eye splice, in words
1. whip the end; unlay three strands
2. form the eye; lay the strands on the standing part
3. first tucks: one strand under each strand of the standing part
4. over one, under one, for 3+ full rounds
5. roll smooth; trim the ends

# tuck against the lay; pull each tuck snug
```

Technique	Best for	Strength	Weakness
Square lashing	Poles crossing at right angles	Tight, neat frame joints	Needs good rope and hard pulling
Diagonal lashing	Poles crossing at an angle, bracing	Draws springy poles together	Takes practice to keep wraps tidy
Eye splice	Permanent loop in laid rope	No knot to untie or snag	Slow; hard to undo; suits laid rope

> **Practise on thick rope first**

Thick, soft laid rope is far easier to splice than thin or stiff cord. Learn the tucks on a short length of it before trying a real job.

Not Yet Verified, and Sources

- **Source.** Written from general knowledge of common knot practice; no specific source was read, and nothing is quoted from a text.
- **Marked (check).** The best rope for lashings, typical uses of the diagonal lashing, and how a splice compares in strength with a knotted loop.
- **Descriptions.** The steps are in words, and splices in particular are hard to learn from text alone. Follow them with real rope and adjust to what you see.

Exercises

EXERCISE 1

Using two broom handles or garden canes and some cord, tie a square lashing. Test it by twisting and pushing the poles, then add the frapping turns (or pull them harder) and test again. Write down what changed.

→ Solution

EXERCISE 2

Lash two canes into an X with a diagonal lashing, then stand them as a small A-frame. Does the joint hold when you push the legs apart? Explain why the first wraps matter.

→ Solution

EXERCISE 3

On a short length of thick three-strand rope, make an eye splice with at least three full rounds of tucks. Compare it with a bowline in the same rope: which is quicker, neater and easier to undo?

→ Solution

Quick Reference

- **Lashing:** many turns binding poles together
- **Square lashing:** poles at right angles; wraps then frapping
- **Diagonal lashing:** crossing poles at an angle; draw them together first
- **Eye splice:** a permanent loop made by tucking strands
- **Always** test a lashed structure before trusting it

Coming next

Chapter 8 puts the knots to work around the camp and the home: pitching tarps, hanging washing lines and tying a load.

Knots and Rope Work

Course 1 · Chapter 8 · Camp and Home: Tarps, Washing Lines and Loads

The knots from earlier chapters earn their keep in everyday jobs: a tarp over a campsite, a washing line across a garden, a load strapped to a roof rack or trailer. Most of these jobs need the same thing, a line that is tight, adjustable and easy to undo. This chapter adds one new knot, the trucker's hitch, and shows how the old ones combine.

What Everyday Jobs Need

- **Tension.** A sagging line or loose load is useless, and a loose load is dangerous on a road.
- **Adjustment.** Rope stretches, wood shrinks and weather changes, so the knot must tighten again without being retied.
- **Release.** You will untie it in the rain, with cold hands, after a load has pulled on it all day.
- **A sound anchor.** The tree, post or rail must be strong enough for the pull put on it.

Pitching a Tarp

A simple tarp shelter hangs from a ridgeline, a rope strung between two anchors, with the tarp draped over it and its edges pegged or tied out. (Many layouts exist; this is one common one.)

1. Tie one end of the ridgeline round a tree or post with a round turn and two half hitches.
2. Walk to the other anchor, pull the line taut and tie a taut-line hitch so it can be tightened later.
3. Drape the tarp over the ridgeline and tie each corner out to a peg or branch, using a bowline in the guy line or a clove hitch on a peg.
4. Pull the corners down and out until the tarp is firm, then adjust each guy with its taut-line hitch.
5. Set it so rain runs off: one side lower than the other, and no pockets where water can pool.

```
# tarp pitch, in words
1. ridgeline: round turn + 2 half hitches at one end
2. taut-line hitch at the other; pull taut
3. drape the tarp; tie each corner out (bowline or clove hitch)
4. tighten the guy lines; slope one side so water runs off
```

```
# adjust the taut-line hitches after the first hour
```

The Washing Line

A washing line is a tension job that stays up for months. Wet washing is heavy, so the line must be tight when empty and still hold when loaded. Use rope that does not rot or stretch much when wet. (Best material: check.)

1. Tie one end to a post or hook with a round turn and two half hitches, then add a stopper such as a figure-eight on the tail.
2. Pull the line across to the far post and wrap it once or twice round it.
3. Tie off with a trucker's hitch (below) or a taut-line hitch, and pull until the line is firm, then retie lightly if it sags later.
4. Check posts and hooks after a windy week; loose anchors are the usual failure.

The Trucker's Hitch

The trucker's hitch makes a pulley out of the rope itself, so one pull gives several times the force. It is the standard way to tension a line or tie down a load. The force gained is only approximate, because friction costs some of it. (Exact force gain: check.)

1. Tie the rope to the anchor or load at one end and run it across to the far anchor.
2. Near the middle, tie a loop in the rope that will not slip, such as a slipknot or an alpine butterfly pulled into a loop.
3. Pass the free end round the far anchor (a hook, rail or ring) and back up through the loop.
4. Pull down on the free end. The loop acts as a pulley and the line tightens.
5. Hold it tight, then lock it off with two half hitches round the standing line.

```
# trucker's hitch, in words
1. fix the rope at the near end; run to the far anchor
2. make a non-slipping loop in the standing part
3. free end round the far anchor, back through the loop
4. pull down to tension; lock with 2 half hitches
```

```
# the loop is the pulley; the half hitches hold the tension
```

Loads on the road need more than a knot

A trucker's hitch can tighten a rope hard, but a heavy or awkward load on a vehicle should be held with purpose-made straps or ratchets, and checked after the first few minutes of driving. Ropes that are tied well can still fail if the anchor points or the load itself are not secure.

Job	Knots	Why	Watch for
Tarp ridgeline	Round turn and two half hitches; taut-line hitch	Secure at one end, adjustable at the other	Weak or low anchor trees
Tarp corners	Bowline; clove hitch on a peg	Quick, firm, releasable	Pegs pulling out in wind
Washing line	Round turn and two half hitches; trucker's hitch	Long-term tension	Stretch and sagging
Tying a load	Trucker's hitch; two half hitches to lock	High tension, easy release	Slipping loop; shifting load

Practise at home before you need it

Tie a trucker's hitch on a chair back and a table leg in the kitchen. It is far easier to learn there than in a wind, in the dark, with a flapping tarp.

Not Yet Verified, and Sources

- **Source.** Written from general knowledge of common camp and household practice; no specific source was read, and nothing is quoted from a text.
- **Marked (check).** The best material for a washing line and the exact force gained by a trucker's hitch.

- **Descriptions.** The steps are in words, and the trucker's hitch in particular is easiest to learn with real rope in your hands. Adjust to what you see.

Exercises

EXERCISE 1

Pitch a sheet or small tarp between two chairs or garden posts using a ridgeline with a round turn and two half hitches at one end and a taut-line hitch at the other. Tighten the ridgeline, then loosen and re-tighten it without retying. Write down what you adjusted.

→ Solution

EXERCISE 2

Tie a trucker's hitch between a chair and a table leg. Pull it tight and lock it with two half hitches. Then try the same job with only a taut-line hitch. Which gets the line tighter, and which is quicker to release?

→ Solution

EXERCISE 3

Tie a bag or box of books to a chair with rope so it cannot slide off when the chair is tilted slightly. Use a trucker's hitch for the tension. Then list two ways the load could still shift or the knot could slip.

→ Solution

Quick Reference

- **Ridgeline:** anchor one end firmly; adjustable hitch at the other
- **Washing line:** tight when empty; check the anchors

- **Trucker's hitch:** a loop in the line makes a pulley; lock with half hitches
- **Loads on the road:** use proper straps; check after a few minutes
- **Always** test the anchor as well as the knot

Coming next

Chapter 9 looks at knots at sea, on rock and in safety work, and why a knot that holds a tarp is not good enough when a life depends on it.

Knots and Rope Work

Course 1 · Chapter 9 · Sea, Rock and Safety: When a Life Depends on the Knot

A tarp that slips is an annoyance. A knot that fails on a climb or a boat can injure or kill. Sailors and climbers use many of the knots you already know, but they use them with different habits: tie them the same way every time, dress them neatly, back them up and have them checked. This chapter is an introduction to those habits, not a substitute for instruction from a qualified person.

> **Learn life-safety knots in person**
>
> Never rely on a book or web page alone for anything that holds a person. Learn climbing and rescue knots from a qualified instructor, use equipment rated for the job, and have your knots checked by someone experienced.

Why Safety Knots Are Different

- **Consequences.** A failure is not an inconvenience but an accident.
- **Consistency.** The same knot is tied the same way every time, so that it can be recognised and checked at a glance.
- **Dressing.** Every strand lies neatly and no turns are crossed, because a messy knot can be weaker and is harder to check.
- **Tails.** A long enough tail is left beyond the knot, since a knot can creep under load and shake. (Exact tail lengths vary by guidance: check.)
- **Backups.** A second knot or a different safeguard covers the first if it fails.
- **Checks.** Climbers check themselves and each other before leaving the ground. Sailors check their lines before the weather turns.

Knots at Sea

Boats use rope everywhere, and sailors call a rope in use a line. The jobs are the ones from earlier chapters, done in wet, loaded conditions.

- **Bowline.** The classic loop at the end of a line, used to fasten a sheet to a sail or make a loop for a mooring. It is easy to untie after loading. It can work loose when the line is slack or shaken, so a tail and sometimes a backup are used. (Details of backups: check.)

- **Cleat hitch.** Secures a line to a cleat on a dock or deck. The line goes round the base, then figure-eight turns over the horns, ending with a locking turn. It holds, yet can be released under some load.
- **Round turn and two half hitches.** Ties a boat to a ring or post and can be adjusted.
- **Sheet bend.** Joins two lines, especially of different thickness.
- **Clove hitch.** Quick to tie round a rail or post for temporary jobs such as a fender. It can slip if the pull varies, so it is not trusted for important tasks. (Fender practice: check.)

Sailors also learn to coil and stow lines tidily, so a line can run free when needed and never tangles around a foot.

Knots on Rock

Climbing ropes are made for a particular job and have their own care rules. Climbers use a few knots, learned thoroughly.

- **Figure-eight follow-through.** The common way to tie a rope to the harness. A figure-eight is tied first, then the tail is threaded back along it in the opposite direction, following the same path. It is easy to see whether it is correct.
- **Stopper knot on the tail.** A knot at the end of a rope so that it cannot run out of a belay device.
- **Clove hitch.** Used to attach the rope to an anchor point quickly and to adjust its length.
- **Double fisherman's bend.** Joins two rope ends, as in chapter 5, and is also used to make loops of cord. Back up the knot with stopper knots on both tails.
- **Alpine butterfly.** A loop in the middle of a rope that can take a pull from several directions (see chapter 4).

Setting	Typical knot	Job	Habit
Sailing	Bowline	Loop at the end of a line	Leave a tail; check for slack shake-out
Sailing	Cleat hitch	Tie off to a cleat	Finish with a locking turn
Climbing	Figure-eight follow-through	Rope to harness	Dress it; check it and have a partner check it

Setting	Typical knot	Job	Habit
Climbing	Double fisherman's	Join two ropes or make a loop of cord	Back up the tails
Anywhere	Alpine butterfly	Mid-rope loop	Dress it; use in a rope that can take the load

A Safety Habit You Can Practise

You can build the right habits on harmless jobs. Before trusting any knot, run through the same short check, saying it aloud if it helps.

```
# the check before you trust a knot
1. right knot for the job?
2. tied the usual way, every strand lying neatly?
3. tail long enough, and tidy?
4. tightened and set (pulled firm)?
5. backed up where it matters?
6. anchor and rope sound?
7. second person has looked at it

# if any answer is "not sure": retie, or ask
```

> **The knot is only one link**
>
> A perfect knot in worn rope, on a weak anchor or with the wrong equipment is still a failure waiting to happen. The whole chain counts: rope, knot, anchor, equipment and the people using them.

Rope Care for Safety Use

- Keep ropes away from sharp edges, chemicals, heat and long exposure to sunlight.
- Retire rope that is cut, stiff, fuzzy, glazed or has soft spots. (Retirement guidance: check with the maker.)

- Keep a record of the age and use of a climbing rope, since you will not see all damage by eye.
- Do not use a rope made for one job (a boat line or a garden cord) for another, such as holding a climber.

Not Yet Verified, and Sources

- **Source.** Written from general knowledge of sailing and climbing practice; no specific source was read, and nothing is quoted from a text.
- **Marked (check).** Tail lengths, bowline backups, fender-knot practice and rope retirement guidance. Always follow the rope maker and a qualified instructor.
- **Not a safety manual.** This chapter explains the idea of safety knots. It does not teach the steps of life-safety knots, which need a teacher.

Exercises

EXERCISE 1

Write a short check-list of your own (five to seven items) to run before trusting any knot on a boat or at a climbing wall. Then use it on a harmless knot, such as a bowline tying a bag to a chair, and note any item you skipped.

→ Solution

EXERCISE 2

Tie a bowline in a thin rope and shake it while the rope is slack. Does the knot stay sound? What would you add (tail, backup) if it mattered? Then repeat with a clove hitch on a rail and pull from changing directions.

→ Solution

EXERCISE 3

Choose one safety setting (a boat mooring, a climbing wall, or a home job such as hanging a heavy plant). List the full chain, from rope to anchor to equipment to people, and name the weakest link. Say who you would ask to check it.

→ Solution

Quick Reference

- **Safety knots:** same way every time, dressed, tailed, backed up, checked
- **Sea:** bowline, cleat hitch, round turn and two half hitches, sheet bend
- **Rock:** figure-eight follow-through, double fisherman's, clove hitch
- **The chain:** rope, knot, anchor, equipment and people
- **Learn it in person** from a qualified instructor

Coming next

Chapter 10 is the capstone: ten knots to know for life, and a practice plan to keep them in your hands.

Knots and Rope Work

Course 1 · Chapter 10 · Capstone: A Knot Kit for Life

You have met many knots across nine chapters. Nobody needs them all. This capstone picks ten that cover almost every ordinary job, groups them by what they do, and gives you a plan to keep them in your hands. A knot you tied once is a memory. A knot you tie weekly is a skill.

The Ten Knots

The choice below is a suggestion, built from the jobs in earlier chapters. Swap one or two if your own life calls for it.

#	Knot	Kind	Main job	Chapter
1	Overhand knot	Stopper	Stop a rope end running through; the base of other knots	3
2	Figure-eight	Stopper	A bigger, easier-to-untie stopper	3
3	Bowline	Loop	A fixed loop at the end of a rope	4
4	Alpine butterfly	Loop	A loop in the middle of a rope	4
5	Reef knot	Bend	Tie bundles and bandages (not for load-bearing joins)	5
6	Sheet bend	Bend	Join two ropes, even of different thickness	5
7	Clove hitch	Hitch	Quickly fasten to a post or rail	6
8	Round turn and two half hitches	Hitch	A secure, adjustable tie to a ring or post	6
9	Taut-line hitch	Hitch	An adjustable loop for guy lines and tarps	6
10	Square lashing	Lashing	Bind two poles at right angles	7

Between them these cover stopping, looping, joining, fastening, adjusting and binding: the six jobs a rope does most.

Where is the double fisherman's?

It is a fine knot, but it is fiddly and used mostly in climbing and for cord loops. The sheet bend handles most everyday joins. If you climb or sail, add the knots from chapter 9 under proper instruction.

Choosing a Knot: Questions in Order

When you pick up a rope with a job in mind, ask the same few questions every time. They lead to the right knot more often than recall alone.

```
# which knot for the job?
Q1. Does the rope end need to be stopped?      -> overhand or figure-eight
Q2. Do I need a loop?
      end of the rope                          -> bowline
      middle of the rope                       -> alpine butterfly
Q3. Am I joining two ropes?                   -> sheet bend (reef for bundles)
Q4. Am I fastening to something?
      quick, light, pull stays steady          -> clove hitch
      needs to hold and be adjusted            -> round turn and two half hitches
      needs to slide and tighten               -> taut-line hitch
Q5. Am I binding poles together?              -> square lashing
Q6. Does a person's safety depend on it?      -> stop: learn it in person first
```

A Practice Plan

Ten minutes a few times a week beats an hour once a month. Use a metre or so of soft, thick practice rope (a stiff or very thin cord is harder to learn on) and tie each knot until you can do it without thinking.

- **Week 1: stoppers and loops.** Knots 1 to 4. Tie each five times, then once with your eyes closed or behind your back.
- **Week 2: bends.** Knots 5 and 6. Tie them in two ropes of different thickness and test by pulling. Check you can tell a reef from a granny at a glance.

- **Week 3: hitches.** Knots 7 to 9. Tie each round a chair leg, a rail and a pole, and watch how each behaves when you pull from different directions.
- **Week 4: lashing and review.** Knot 10 on two sticks, then all ten in a row against a clock, aiming for tidy rather than fast.
- **After that:** pick one knot a week at random and tie it for a real job: a bag, a washing line, a parcel, a tarp.

```
# a simple practice log
date      knot             tries  tidy?  note
03 Nov    bowline          5      yes    forgot the tail once
05 Nov    sheet bend       4      no     wrong side, retied
08 Nov    clove hitch      6      yes    held on a rail
```

Habits That Last

- **Keep a rope handy.** A short length in a bag, a drawer or the car means you will actually use it.
- **Tie it for real.** A knot used on a real job sticks better than one drilled on a table.
- **Dress and set.** Make every knot neat and pull it firm, so your hands learn the finished shape.
- **Test small first.** Pull on a knot gently before trusting it with a load.
- **Know the limit.** Anything that holds a person is learned in person, as chapter 9 said.
- **Care for the rope.** Dry it, keep it from sharp edges and sunlight, and retire it when worn (see chapter 2).

> **What you now know**
>
> The vocabulary (knot, bend, hitch, splice), the rope itself, the six main jobs, a working kit of ten knots, and a habit of checking your work. That is a sound base for sailing, camping, climbing, the home and the garden.

Not Yet Verified, and Sources

- **Source.** Written from the earlier chapters of this course and general knowledge; no specific source was read, and nothing is quoted from a text.
- **Choice of ten.** A suggestion, not a standard list. Other teachers choose differently. (check)
- **Practice schedule.** The weekly plan is a sensible guess, not tested guidance.

Exercises

EXERCISE 1

Without looking at the table, write down the ten knots from memory with the job each one does. Check against the table and mark any you missed. Then decide whether to swap one for a knot that suits your own life better, and say why.

→ Solution

EXERCISE 2

Run the knot-choosing questions on five real jobs around you (for example hanging a bag, tying a parcel, securing a washing line, joining two cords, pitching a tarp). Name the knot you would use for each and the question that led you there.

→ Solution

EXERCISE 3

Start the four-week practice plan. Tie knots 1 to 4 five times each, then fill in three lines of a practice log with the date, knot, tries and a note. At the end, say which knot you find hardest and what you will do about it.

→ Solution

Quick Reference

- **Stoppers:** overhand, figure-eight

- **Loops:** bowline (end), alpine butterfly (middle)
- **Bends:** reef (bundles), sheet bend (joining ropes)
- **Hitches:** clove, round turn and two half hitches, taut-line
- **Lashing:** square lashing
- **Practise:** little and often, on real jobs; learn life-safety knots in person

Course complete

That is the end of the course. Keep a rope in your bag and a knot in your hands.