

# Knotmaster Program

**Troop 1011: Marietta, Georgia, Atlanta Area Council**



## PROGRAM OVERVIEW

The purpose of the Knotmaster Program (KMP) is to encourage Scouts (and anyone) to learn how, when, and where to make useful and practical knots both in and out of Scouting.

Knots in this program are grouped into progressively difficult levels each with 8 knots. Once a level is complete, the Scout receives a colored lanyard to wear on his official carabiner. Although a Scout may learn knots in any level, he must test for levels 1-5 in sequential order.

To begin, each participant is given a basic 10 minute overview of the program (Level 0: Newbie) and taught a few basic terms and knots. The Scout then receives a practice rope, carabiner, progress card and handout. The practice rope and all award lanyards are to be carried on the carabiner on the Scout's side belt loop. The "Carry Loop" is the suggested knot for wearing.

To complete each level, when the Scout is ready, he is "checked off" on each knot by a Scout or Scouter at least one level above him or a Knotmaster Chief (see below). He must also know a few basic terms and have taught 3 other people to learn a knot. He then can be "tested" by the Knotmaster Chief to receive his lanyard. Only one level may be earned at each meeting or event. On campouts, a Scout may only earn one level per day.



These first six pages need not necessarily be given to the Scouts unless they are interested. They are for those directing the program and for others who are interested in repeating or building from it. For most Scouts, the program details might be of little interest and can be brought up when needed by the Program leaders.

There are many programs on the internet similar to this one. In fact, this one began from copying another one of those. If you weren't aware, knots continually evolve and some in this program were not even known when Baden Powell began Scouting. New rope, testing methods and knot understanding has both improved some knots (Zeppelin Bend) and discredited others (Sheepshank). Just as the Scouting program changes over time, knot skills should, too.

Because both Scouts and Adults will be in the program, the term "Knotter" will be used throughout to refer to anyone in the KMP.

This program will only work if integrated into the Troop's goals. It has been found that many Scouts, especially older ones, will not take on this "extra" voluntary learning unless somehow encouraged at both the SPL and SM level. We suggest you make it a part of Troop meetings, camp outings, etc. in a proactive basis. It will also help to recognize those who rank up in public forms for both awareness and encouragement.



## GOALS OF THE KNOTMASTER PROGRAM

1. Provide a process and environment to learn knot skills for
  - rank advancement & merit badges and
  - everyday practical situations
2. Provide advancement and mastery with progressively more difficult knot levels
3. Provide a visual reward that also encourages others
4. Provide an occasion for one-on-one teaching per the E.D.G.E. method
5. Continually test knot skills so they are retained and improved

## KNOT LEVEL EXPLANATION

Knots have been selected based on the goals above. The beginning levels are simple and/or a part of rank advancement. Levels become progressively more difficult but hopefully not so much that Knotters will be discouraged from continuing.

There are a total of 10 levels:

- **Levels 1-5:** Knotters should be able to be complete these levels in 2 years or less. Level 1-5 are analogous to earning 1<sup>st</sup> Class, i.e. all Scouts can and should earn them.
- **Specialty Levels S1-S4:** These levels specialize in knots that are used under a common interest. These are analogous to Merit Badges (MB) and the Life/Star Scout ranks.
- **Level 6:** This level is analogous to earning Eagle. It is meant to be challenging. The Knotter will learn new knots on his own and teach/demonstrate them to others. He will create a knot project that will benefit the Troop or Troop area. He will be tested on previous knot making skills.



## LEARNING

Handouts (below) are available for each level. Although basic information is provided for each knot, the handouts rarely demonstrate how to make the knot. The Troop encourages Knotters to seek out others and learn one-on-one per the EDGE method: Explain, Demonstrate, Guide and Encourage. This gives the higher level Knotter practice teaching and skill retention.

As a part of level advancement, each Knotter must teach 3 knots (same or different) that he's learned to 3 other people, preferably Knotters in the program; but it can be a sibling, parent or friend. Those people must then initial the bottom of the Knotter's progress card.

There are many books on knot learning (ideal birthday gift!) as well as cards, apps and the internet. There might be several ways to make a knot. Whichever way works well for the Knotter should be used as long as the end result is the same.

Here are some resources. Click for links.

### • INTERNET

- [Grog's Animated Knots](#) (excellent, also an app!)
- [Wikipedia List of Knots](#)
- [Andy's Most Useful Knots](#)
- Plus many more.

### • BOOKS (links to Amazon)

- [The Handy Book of Knots](#) by Randy Penn
- [The Handbook of Knots](#) by Des Pawson
- [The Ultimate Encyclopedia of Knots and Ropework](#) by Geoffrey Budworth
- of course there are many others

### • OTHER

- [NetKnots.com](#): knot cards grouped into topics
- [Deck of Cards Knots](#) from Scoutstuff.org
- [Knot Tying Kit](#) from Scoutstuff.org



### PROGRESS CARDS, CHECKING & SIGNING OFF

When a Knotter feels he has learned a knot sufficiently to be signed off, he approaches any Knotter at least one level above him (or a Knotmaster Chief in the beginning phases) and asks to be “checked”. This is to both take the load off of the Knotmaster Chief as well as improve troop interaction.

He may only be checked on knots in his current level. He can be checked for any number of knots at one time as the checker has time for.

Checking may only happen at troop meetings and on official troop outings as time allows. Individual patrol outings or meetings (other than during a troop meeting) are not valid checking times.

For each knot, the Knotter ...

1. ... states the knot’s name
2. ... states the type of knot (hitch, bend, loop, etc.)
3. ... gives one or more examples of when and where the knot might be used
4. ... ties the knot within 2 attempts under the following conditions:
  - a. no help from anyone may be given or asked for except to hold the standing part of the rope if necessary
  - b. no written or drawing information may be used, i.e. it must be done from memory
  - c. knots should be tied correctly AND neatly
  - d. when finished, the Knotter should say “completed” at which time the judge examines the knot
5. The judge should watch how the knot is tied for critique later if the knot cannot be made
6. If the judge determines the knot is tied incorrectly or sloppily, the Knotter must retie the knot, i.e. use his 2<sup>nd</sup> attempt. The Knotter may not reference any person or material before the 2<sup>nd</sup> attempt, otherwise he forfeits this check.

If the Knotter CANNOT complete the above steps, then he must wait at least 1 day before being checked again for that knot. This is to discourage the “quick” look up of what was done incorrectly and to encourage actually learning to do the knot.

If the Knotter CAN complete the knot as determined by the judge, the judge then initials and dates the Progress Card next to the completed knot.

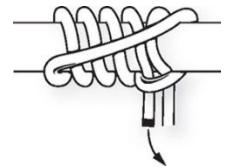
### TESTING & LEVEL ADVANCEMENT

The reward for completing a level is receiving a colored lanyard. To earn it and advance to the next level, a Knotter must have all of the knots in his level “signed off” as noted above. He then approaches a Knotmaster Chief (KMC) and asks to be “tested”. This is analogous to a Scoutmaster Conference.

Testing may only happen at troop meetings and on official troop outings as time allows. Individual patrol outings or meetings (other than during a troop meeting) are not valid testing times.

The KMC will randomly select three (3) knots from the current level being tested and any one (1) knot from every level previously earned by the Knotter. By only demonstrating a few knots, the KMC’s time is used wisely. Demonstrating a previously learned knot improves retention. Testing is performed with the same steps as Checking. If the Knotter fails any one knot (after 2 attempts), they must wait at least one day before being tested again.

If achieved, the Knotter is immediately rewarded with the level’s lanyard to be worn on the carabiner and the next level’s handout is given.





### WEARING THE LEVEL LANYARDS

When not being used, the award lanyards and practice rope should be tied with the Rope Carry knot. Both are to be attached to the carabiner which is then clipped to either a left side or right side pants belt loop. Troop 1011 considers this to be a part of the Class A uniform and may be worn at all formal and informal functions.

### PROGRAM NOTES

#### Contests and Challenges

Any good knot program and scouting event allows “challenges” between scouts of the same level. Contests are fun and provide good practice for skill and speed improvement. Contests are part of many programs both in and out of Scouting and are highly encouraged in this one.

However, this Troop does not believe that a Scout should lose his colored lanyard as some programs allow. A Scout does not lose a merit badge nor rank because of his inability to perform a previously learned skill. Other methods for fun and fair contests will be provided by the troop both individually and in groups. Awarding winners is also encouraged, ex. plaque, item to wear (beads, totem), etc. However, the lanyard earned is always kept.

#### Lost Equipment

Practice ropes, award lanyards and the carabiner are free upon beginning the program and each level. If lost, replacements should be purchased.

Practice rope: \$0.50  
Colored award lanyard: \$1.00  
Carabiner: \$1.50

#### Lost Progress Cards

If the Progress Card is lost and no copy of current achievements can be produced, the Knotter must demonstrate all knots to his current level to proceed to the next.

### Reasoning for the Knot Selection

Wondering why you don’t see a specific knot in this program or why some were included?

Knots not normally part of the Boy Scout program have been chosen for either their practical uses (zeppelin bend, constrictor knot, marlinespike hitch, etc.) or for their decorative or popular appeal (Turk’s head, Half Windsor, sinnets, etc.)

Some common knots found in other Knot Programs and Scouting publications have been excluded because of their lack of everyday usefulness or practicality (bowtie knot, thief knot, lariat loop, etc.)

Knots specifically devoted to sailing have been purposely excluded. Unless a Scout spends time on sail boats, he will not find purpose to use them nor retain the skill in making them.

Other Troops using this model are welcome to modify this program to suit their Troop’s needs. Troops, and specifically Ships and Crews, may want to either add or modify a specialty group(s) to include sailing knots, salt-water fishing, rescue knots, etc. We at Troop 1011 encourage this endeavor.

### GRAPHICS

An attempt has been made to use public domain or with-permission graphics. If you find an error, email Troop 1011.

### COPYING AND USING THIS PROGRAM

Feel free to use this program in whole or part for your troop as you see fit. We claim no copyright on any material here-in. Pictures here-in were obtained from the internet. Use at your discretion. (Although maybe a little note somewhere that says it came from Troop 1011 in Marietta, Georgia would be nice. ☺)



## **MATERIALS**

### **Practice Rope**

The ideal rope is not elastic (shock cord) nor will it be too spongy (cotton) or else it will jam and tighten so much that it can't be undone. Twisted rope comes undone if the whipping or fusing comes off. We didn't want a rope that's too thick or thin. Natural fibers can dry out and rot over time. And of course, cost is an issue when making so many for an entire troop.

Troop 1011 settled on 3/16" or 1/4" White Diamond Braided Nylon/Polyester cord. It's currently easy to find in 50' and 100' lengths in the local hardware stores. It's supple enough to tie into knots but doesn't jam as easily. (But leave it to a Scout and they'll find a way.)

We give each scout a 6-7 foot piece which they then should tie into a Carry Knot to hang on their provided Carabiner.

### **Rope Fusing**

If you have a small troop, cutting and fusing each rope end with a lighter or torch will probably be the cost-effective method. Our Troop has over 100 Scouts and adults and this process can be tedious.

We purchased a handheld electric "Rope Cutter" that has a hot blade for ~\$60. For about \$100 you can get a desk top model that is even easier to use. These units have a "blade" that gets hot enough to melt through the rope and at the same time fuse the ends very cleanly. We highly recommended this purchase if the budget allows.

### **Lanyards**

For the colored award lanyards we purchased 1000' feet of white paracord (comes on a spool) and 100' of the other colors. We assumed many Scouts will start the program but fewer will follow through.

We only give out 5' of the award lanyards because it divides into 100' evenly. The Scouts are expected to knot this rope into the Carry Knot for the carabineers, too. They may also use it for knot tying practice, etc.

It is suggested that your troop have a chest or area to store longer practice ropes in varying sizes and materials. Also have long dowels available for lashings. These materials will not only help with the KMP but with rank advancement. The provided ropes in this program are not long enough to make some knots, especially the lashings. Paracord is also difficult to use in a lashing since it is thin and slippery.

### **Carabineers**

We purchased ours in bulk from an online "personalized gift" store, [lazerdesigns.com](http://lazerdesigns.com). We went with the largest (3") with a flat side for the engraving. Of the many colors available, we chose red. Green and gold were also considered. They have many fonts and print options.

### **Handouts**

We only hand out copies from this document as needed, i.e. Scouts working on level 1 receive the level 1 handout.

Progress Cards (a PowerPoint file) should accompany this document. There is a progress card for levels 1-5 and another one with the specialty and level 6 options. The Progress Cards were made on heavier card stock and are formatted to be tri-folded for carrying. Since they list 5 levels at a time, a Scout can see which knots are coming up if interested.

### **Spreadsheet Tracking**

It is suggested the Knotmaster Chief keep a record of who has earned which level. Scouts, on occasion, lose things ... at least ours do. We also keep a record of when the program was started and in which rank the Scout began the program, (i.e. TF, 2<sup>nd</sup> Class, etc.)



# KNOTMASTER PROGRAM LEVELS OVERVIEW



PRIMARY LEVELS (1-5)	Level 4 - ROYAL BLUE / Apprentice (Advanced Knots)	S-3 - Fishing Knots - TURQUOISE
<p><b>Level 0 - PRACTICE ROPE / Newbie</b> <b>Preliminary Teaching</b> Note: introduction to the Program, instructor defines and demonstrates the knots</p> <ul style="list-style-type: none"> <li>A rope's standing end, working end, turn, round turn, 2 round turns</li> </ul> <p>0-1 Overhand Knot 0-2 Double Overhand Knot</p> <p><b>Level 1 - WHITE / Novice</b> <b>(Basic Knots)</b></p> <ul style="list-style-type: none"> <li>Define a Stopper Knot, Bind, Bend and Hitch</li> </ul> <p>1-1. Figure Eight Knot 1-2. Square Knot (Scout Badge) 1-3. Surgeon's Knot 1-4. Sheet Bend 1-5. Clove Hitch (1<sup>st</sup> Class) 1-6. Taut-line Hitch (Tenderfoot) 1-7. Timber Hitch (1<sup>st</sup> Class) 1-8. Round Turn &amp; 2 Half Hitches (Tenderfoot)</p> <p><b>Level 2 - YELLOW / Trainee</b> <b>(Intermediate Knots)</b></p> <ul style="list-style-type: none"> <li>Complete Level 1</li> <li>Define &amp; Demonstrate a Bight, Overhand &amp; Underhand Crossing Loop</li> </ul> <p>2-1. Zeppelin Bend 2-2. Slipped Knot 2-3. Bowline (1<sup>st</sup> Class) 2-4. Chain Sinnet 2-5. Clove Hitch "in the Bight" 2-6. Fisherman's Knot 2-7. Whipping / Fusing (Tenderfoot) 2-8. Sheepshank</p> <p><b>Level 3 - GREEN / Rookie</b> <b>(Lashings)</b></p> <ul style="list-style-type: none"> <li>Complete Level 2</li> <li>Define Frapping and what it does</li> </ul> <p>3-1. Square Lashings (1<sup>st</sup> Class) 3-2. Diagonal Lashings (1<sup>st</sup> Class) 3-3. Shear Lashing (1<sup>st</sup> Class) 3-4. Tripod Lashing 3-5. Round Lashing 3-6. Transom Knot 3-7. Seizing 3-8. Package Tie</p>	<p>1. Complete Level 3 2. Define whipping and fusing</p> <p>4-1. Constrictor Knot 4-2. Monkey's Fist 4-3. Butterfly Loop 4-4. Marlinespike Hitch 4-5. Heaving Line Knot 4-6. Trucker's Hitch 4-7. Tumble Hitch 4-8. Camp Gadget (Knotter's Choice)</p> <p><b>Level 5 - RED / Expert</b> <b>(Decorative Knots)</b></p> <p>Note: When testing for sinnets, braids and stitches, the length of the knot is up to the judge until he is satisfied the knot is understood</p> <p>3. Complete Level 4 4. List 3 Natural and 3 Synthetic Ropes and 1 pro and 1 con for each</p> <p>5-1. Square Sinnet 5-2. Round Sinnet 5-3. Three-String Braid 5-4. Chinese Button 5-5. Turk's Head 5-6. Cobra Stitch 5-7. Windsor (Dress Tie) 5-8. Knotter's Choice</p>	<p>Note: knots intended for fishing line can be practiced and checked using practice rope. The final test should use fishing line</p> <p>7. Complete Level 5 S3-1. Clinch Knot (Fishing MB) S3-2. Palomar (Fishing MB) S3-3. Turle (Fishing MB) S3-4. Blood Loop (Barrel Knot) (Fishing MB) S3-5. Double Surgeon's Loop (F. MB) S3-6. Arbor Knot S3-7. Cleat Hitch S3-8. Anchor Hitch</p> <p><b>S-4 - Climbing - BROWN</b></p> <p>Note: Do NOT use these knots for actual climbing and repelling until taught by a qualified instructor and with the appropriate equipment. Serious injury or death could result.</p> <p>8. Complete Level 5 9. Demonstrate 2 Ways to store rope S4-1. Figure 8 on a Bight (Climb. MB) S4-2. Figure 8 Follow-Through (Climbing MB) S4-3. Water Knot (Climbing MB) S4-4. Double Fisherman's Knot (Climbing MB) S4-5. Safety Knot (Climbing MB) S4-6. Directional Figure 8 S4-7. Munter Hitch S4-8. Prusik Knot</p>
SPECIALTY LEVELS (S1-S4)		
Earning 2 Levels = Guru Master		
<b>S-1 - Bowlines - PURPLE</b>		
<p>5. Complete Level 5 S1-1. Double Bowline S1-2. Bowline in the Bight S1-3. Portuguese Bowline S1-4. Triple Bowline S1-5. Running Bowline S1-6. Bowline Bend S1-7. Water Bowline S1-8. One Handed Bowline</p>		
<b>S-2 - Splicing, Whipping &amp; Mats - ORANGE</b>		
<p>6. Complete Level 5 S2-1. Back Splice S2-2. Eye Splice S2-3. Short Splice S2-4. Grommet S2-5. French Whipping S2-6. West Country Whipping S2-7. Carrick Bend Mat S2-8. Ocean Braid Mat</p>		
GRAND MASTER LEVEL (6)		
<b>Level 6 - BLACK / Grand Knotmaster</b>		
<ul style="list-style-type: none"> <li>Complete level 5 AND two specialty levels</li> </ul>		
<p>6-1. Jug Sling 6-2. Icicle Hitch 6-3. Dress Tie Knot (not Windsor or Four-in-Hand) 6-4. A Rope Magic Trick (Knotter's Choice) 6-5. Rope Storage 6-6. Knot Board Option #1 or #2</p>		
<p><b>Required during final test:</b> 6-7. Knot Recognition 6-8. Knot Demonstration</p>		

# Level 0: Newbie – Introduction: Practice Rope

## Basic Terminology, Two Basic Knots, Program Overview

**Welcome to Troop 1011's Knotmaster Program!** Knots and cord have always been a part of Scouting. The reason? They are a useful "tool" in everyday life as they have been for thousands of years. This program gives you the opportunity to learn, apply and teach knots you'll use for the rest of your life.

**LEVELS:** Each level consists of 8 knots. Levels 1 to 5 should be attainable by every Scout in the Troop. Once you finish the first 5 levels, you can work on the Specialty knot levels: fishing, bowlines, climbing, and splices/whipping/mats.

The highest level (6) requires you to have completed levels 1 to 5, two of the specialty groups and 8 more knot projects, some of which you'll get to choose. Like the rank of Eagle, this level won't be easy to attain, and few will make it. But those who do will be called Grand Knotmaster and will know at least 64 knots! Wow!

**LEARNING:** There are handouts for each level, but they won't necessarily show you how to do it. The best way to learn is from someone else. Not only will you get one-on-one instruction, but it gives the higher level Knotter practice. In fact, to earn each level, you'll have to teach three other people (another Scout, sibling, parent, etc.) a knot and have them initial your Progress Card. Each person you teach has to be someone different every time.

**TESTING:** Once you've learned a knot, you get "signed off" by anyone at a higher level than you. Ask that person if they will **JUDGE** your knot tying: tell them the name of the knot, the kind of knot, and a pro, a con and a use for that knot. Then make the knot. Note: you may NOT use any reference or person to help while tying it unless it's to hold the standing end of the rope.

Once finished, say "completed" and hand the knot to the judge. If the judge thinks your knot is acceptable, he will sign and date your Progress Card. If he does not think you've done it correctly, you have one more chance to complete it. You may not review or get help between attempts. Otherwise you must wait at least 1 day to be judged again on that knot.

When you have all knots signed off in one level, it's time to be **TESTED** by a Knotmaster Chief. They will ask you to tie 3 knots of your level and 1 knot from each previous level you've earned. Testing will be just like Judging above.

**AWARDS:** After you pass each level's test, you'll receive a colored lanyard to wear on your Carabiner on your belt loop. This will show to all, like your badge rank, how you've progressed. And hopefully it will encourage others to learn what you've learned. Level 6 will receive a special item to wear.

### NEWBIE TERMINOLOGY

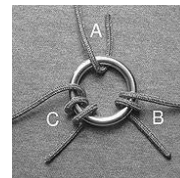
Working (Running) End: the part of the rope you're using to make a knot

Standing End: the part of the rope you're not using

Turn: a single pass around an object (A)

Round Turn: two passes or a complete encirclement of an object (B)

Two Round Turns: circling an object twice, requires three passes (C)



## OVERHAND KNOT

(Thumb Knot, Simple Knot, Common Knot,  
Half Knot if used with 2 cords,  
Half-hitch if tied around an object)

TYPE	PROS	CONS
Stopper	Simplest knot Basis of many knots	Weakens cord by 50% Hard to untie in small cords and when wet
USES	Tied to end of rope to keep from unraveling Use as a handhold	



## DOUBLE OVERHAND KNOT

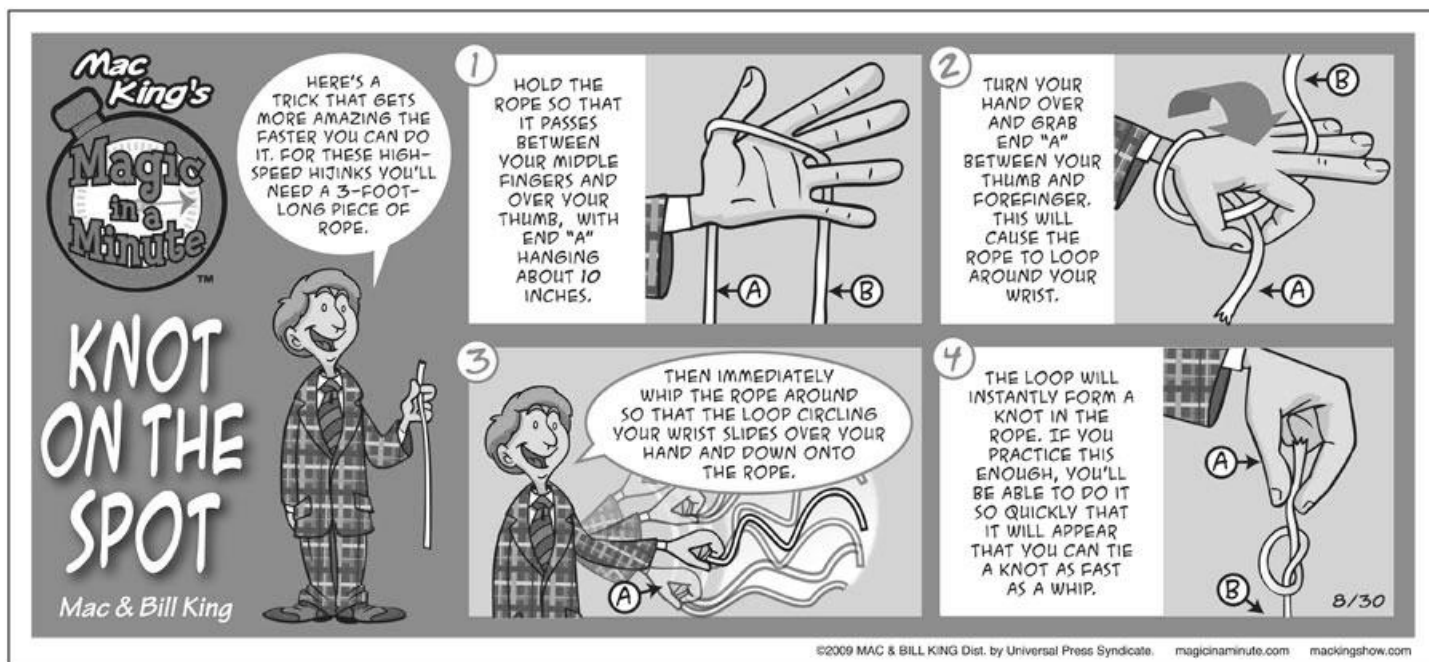
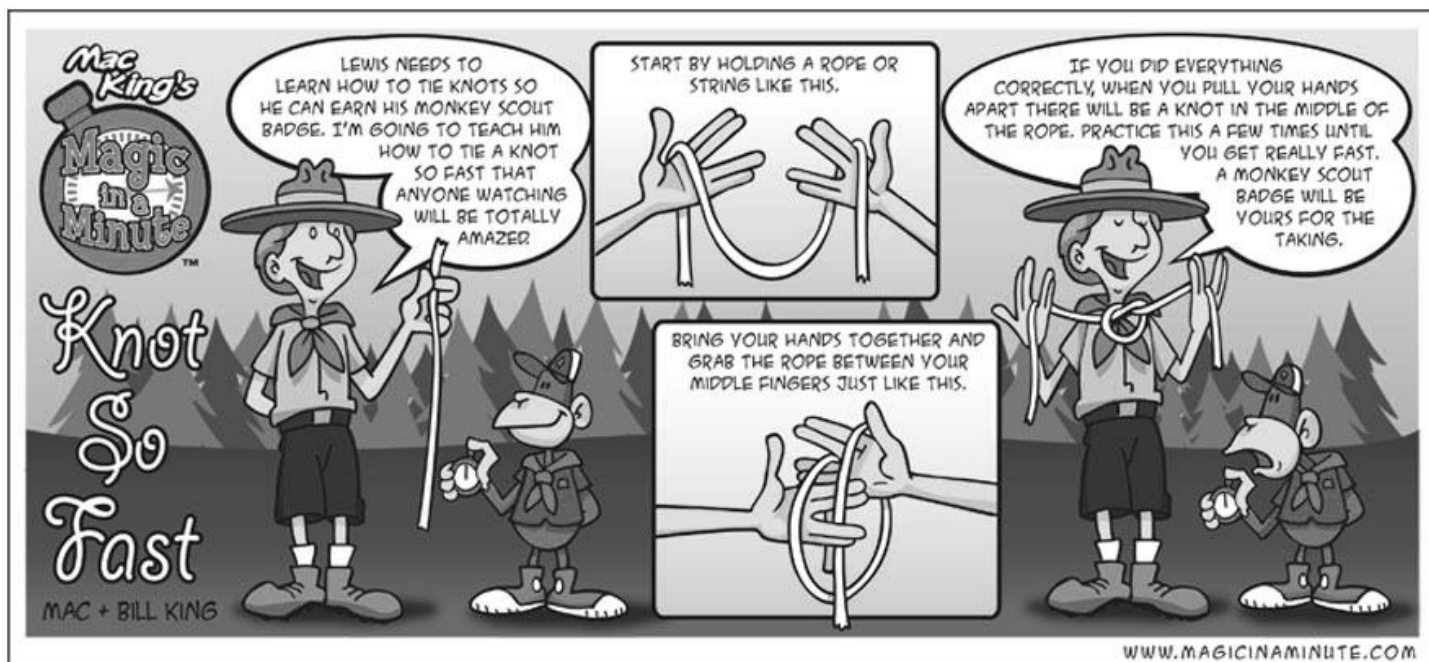
(none)

TYPE	PROS	CONS
Stopper	Bulkier than Overhand Knot	Weakens Cord More difficult to untie
USES	As a bigger stopper knot	



Don't lose your rope equipment. It's free the first time. After that it's 50¢ for the practice rope, \$1.00 for colored award lanyards and \$1.50 for a Carabiner. If you lose your Progress Card, you may have to redo all knots to your current level to prove you are at that level.

Here's something a little fun from Boy's Life.  
Challenge someone to see who can do it the fastest.





# Level 1: Novice – Basic Knots:

## Basic terminology, 8 Knots

The knots in this level are some of the most basic knots you'll use in Scouting. One is required for the Scout Badge, two for Tenderfoot, two for 1<sup>st</sup> Class. Six are required for the Pioneering Merit Badge.

### BASIC TERMINOLOGY

- Stopper Knot: a knot tied to hold a line through a hole  
Bind: a knot used to keep objects together  
Bend: a knot joining two cords  
Hitch: a knot tied to an object (post, cable, ring, spar, etc.) usually under tension

## FIGURE EIGHT KNOT

(Flemish Knot, Savoy Knot, Flemish Knot)

TYPE	PROS	CONS
Stopper	Bulkier than overhand Easier to untie	(none)
USES	Prevent rope going through holes and pulleys.	
SCOUTING	none	

Start as if you're doing the overhand knot but give the loop a half-twist before you tuck the end through. When done, it appears to be in the shape of the number 8.



## SQUARE KNOT

(Reef Knot, Hercules Knot)

TYPE	PROS	CONS
Binding	It's distinctive "square" look	Not reliable as a binding knot
USES	Tie two ends together. Tie trash bags, shoelaces, packages.	
SCOUTING	Scout Badge, Pioneering MB	

You've probably heard "Right over left, Left over right, Makes a knot both tidy and tight" as this is an easy way to remember how to tie this knot.

To loosen, jerk one of the loose ends over the knot and away from the standing end to capsize it.



## SURGEON'S KNOT

(Ligature Knot)

TYPE	PROS	CONS
Binding	More holding power	Should not be used as a bend
USES	Shoe laces, cooking, fly fishing, and surgeons use it to tie off blood vessels.	
SCOUTING	none	

This knot is similar to the square knot except you make one extra crossing in the first step. This gives it extra "grip" to hold the cord in position until you make the final top crossing. You may also make an extra tuck in the 2<sup>nd</sup> step to hold the knot better.



## SHEET BEND

(Weaver's Knot, Common Bend)

TYPE	PROS	CONS
Bend	Effective in joining ropes of different diameter	Works loose if not under load
USES	Joining cord of the same or different diameter.	
SCOUTING	Pioneering MB	

When tied correctly, the loose working ends will be on the same side. If they are on opposite sides, it's a Left-hand Sheet Bend and is insecure. Start with a bight (in the bigger diameter rope if using) and then weave the other rope around it. Snug it up before applying strain.

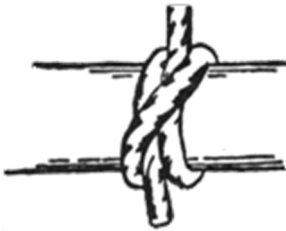


# CLOVE HITCH

(no other names)

TYPE	PROS	CONS
Hitch	Beginning of many lashings	Slips Unreliable on square posts
USES	Beginning of lashings, Belaying.	
SCOUTING	1 <sup>st</sup> Class, Pioneering	

If you look carefully, the clove hitch is just two half-hitches around an object. Although used as the beginning of many lashings and will work okay if strain is kept at right angles, the clove hitch should generally be distrusted and not used alone. See page 387 in the Boy Scout Handbook 12<sup>th</sup> ed. for more info.



# TAUT-LINE HITCH

(Adjustable Hitch, Rigger's Hitch, Tent Hitch)

TYPE	PROS	CONS
Hitch	Can adjust tension after tied	Easy to tie incorrectly
USES	Tent lines, Cargo hold-down.	
SCOUTING	Tenderfoot, Pioneering MB	

One of the hardest things to do is make a line tight and keep it that way. You'll find this knot very useful when putting up your tent as you can tighten down the guy lines with ease. And when it needs to be retightened, it's easy to do.

To tie this knot properly, make sure all 3 turns are going the same way as is shown in the Boy Scout Handbook on page 385 and below left.

If you make the last turn the wrong way as in the picture on the right, it may be tricky to snug up.



Correct



Incorrect

# TIMBER HITCH

(Bowyer's Knot, Lumberman's Knot, Countryman's Knot)

TYPE	PROS	CONS
Hitch	Easily untied	More turns are needed in synthetic rope
USES	Attach rope to tree trunks, branches and log.	
SCOUTING	1 <sup>st</sup> Class, Pioneering MB	

Need to attach a rope to a tree, branch or log? Then use the timber hitch. It's best used if the rope uses natural fiber and is of a good size diameter. You'll often find it used when making a monkey bridge where you can keep the tension on the line.

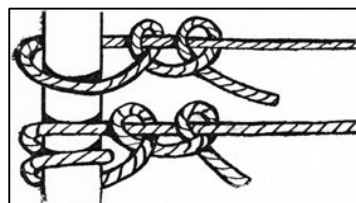
Pass the working rope around the tree (a turn) and then around the standing end. Then wrap the working end back around itself at least 3 times. Pull tight. See page 386 in your Boy Scout Handbook.



# ROUND TURN AND 2 HALF HITCHES

TYPE	PROS	CONS
Hitch	Round turn takes the strain, not the knot Never jams	Isn't adjustable without untying
USES	Firmly attaching a rope to anything.	
SCOUTING	Tenderfoot, Pioneering MB	

This is the most common hitch used when it doesn't need to be adjusted. The round turns are very important as they take the strain while you finish the knot. The BSA Handbook on page 384 does not include the round turn. But unless you're short on rope or the object you're tying to doesn't have the room, make the round turn for extra security. Note that the two half hitches are a clove hitch around the rope itself.



Two Half Hitches

Round Turn and Two Half Hitches

# Level 2: Trainee – Intermediate Knots: **YELLOW**

Level 2 knots work from your knowledge of Level 1 knots. In addition to new bends and hitches, there is fusing, two ways of making the rope shorter, and the “King of Knots”.

## BASIC TERMINOLOGY

**Bight:** A curve in the middle of the rope that doesn’t cross; a middle portion of rope

**Loop:** A curve in the rope that crosses itself

**Crossing Loop Overhand:** A loop where the working end is on top of the standing end

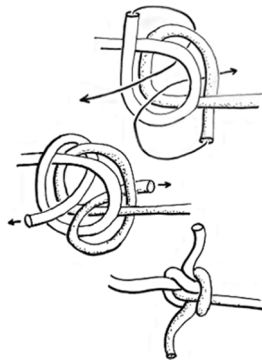
**Crossing Loop Underhand:** A loop where the working end is under the standing end

## ZEPPELIN BEND

(Rosendahl Bend)

TYPE	PROS	CONS
Bend	Easy to tie and untie Holds shape Won't jam	Can't be untied while under load
USES	Connecting two ropes.	
SCOUTING	None	

With so many bends out there, why is the Zeppelin Bend in this Knotmaster Program? When you want to join two ropes of similar diameter, you want it to be easy to remember how to make it, you want it to hold, not jam, and be easy to untie. The Zeppelin bend is all of those things. Plus it has a distinctive look and holds its shape under load or not. Other famous bends like Ashley and Hunter's consistently jam tight and may have to be cut when loosened. Unless you're climbing, the Zeppelin Bend is the way to go. The easiest way to remember how to tie it is the “b/q” or “6/9” method as shown.



## SLIPPED KNOT

(Draw Loop)

TYPE	PROS	CONS
Stopper	Easy to undo	Knot can come undone easily if working end is pulled by accident
USES	Quickly undo any knot.	
SCOUTING	none	

This knot is to learn a basic principle: putting a bight into a final tuck of a knot instead of the end. By doing this, you can untie most basic knots quickly. Make an overhand knot and then put a “bight” in for the last tuck. When you want to undo it, pull on the bight's free end and the knot disappears.



From Animatedknots.com

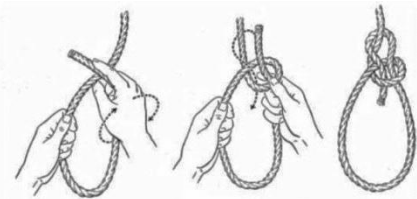
## BOWLINE

(pronounced BOW-lun or BOW-lin NOT BOW-line)

TYPE	PROS	CONS
Loop	Won't tighten down Non Jamming	May not hold in certain conditions and certain types of rope
USES	Creating a non-slipping loop that will not bind.	
SCOUTING	1 <sup>st</sup> Class, Pioneering MB	

After the square knot, Scouts talk about and practice this knot the most. It is very versatile and comes in many flavors. This knot will not tighten down on an object it's looped around and is so used in rescue. There's a reason it's called the “King of Knots”.

Specialty Level S1 is all about bowlines if you enjoy making them. See page 388-389 in your Scout Handbook on steps to tying this wonderful knot.



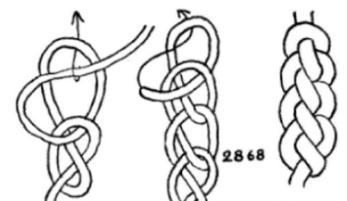
## CHAIN SINNET

(Chain Braid, Daisy Chain, Monkey Braid)

TYPE	PROS	CONS
Storage	Keeps rope from tangling Easy to undo	Takes time to make.
USES	Storing cord, shortening rope.	
SCOUTING	none	

If you coil rope and it ends up all tangled when you uncoil it, then try the chain sinnet. It takes more time to make, but will save time when undoing.

Make a slip knot in one end. Through the bight you just made, pull another bight through. Keep doing this until the end. Then when you're ready to use it, pull on the standing end and it easily comes undone.



# CLOVE HITCH IN THE BIGHT

(Clove Hitch using Half Hitches)

TYPE	PROS	CONS
Hitch	Beginning of many lashings	Slips Unreliable on square posts
USES	Beginning of lashings, Belaying.	
SCOUTING	none	

The “bight” is a curve or middle part of the loop. Therefore, you can make this knot in the middle of the rope without using the ends. You have to have access to the end of whatever you’re putting it on like the top of a post. Form two loops in the same direction, cross them, and then put them over the end of the object. Pull tight.

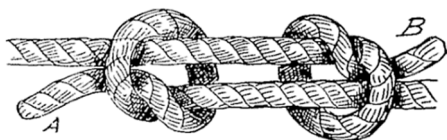


# FISHERMAN’S KNOT

(Waterman’s Knot, Angler’s Knot, Englishman’s Knot)

TYPE	PROS	CONS
Bend	Best when lines are thin	Very difficult to untie in small line
USES	Joining two thin lines together.	
SCOUTING	none	

Although called a knot, this is really a bend. (And don’t confuse it with the Fisherman’s Bend which is a hitch!) It’s composed of two overhand knots on each end that encircle the other’s working end. Make sure you make the same overhand knot on both ends.



# WHIPPING AND FUSING

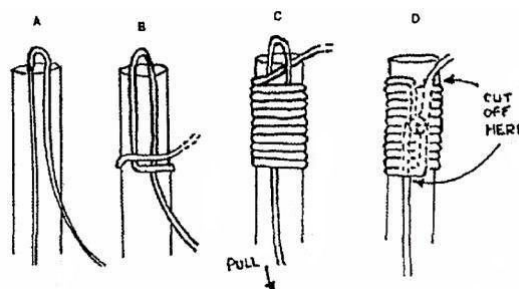
(Plain Whipping, Wolf Whipping)

TYPE	PROS	CONS
End Work	Keeps rope from falling apart	none
USES	see Pros.	
SCOUTING	Tenderfoot, Pioneering MB	

Ropes aren’t just “one” thing. They are composed of many strands in many ways. When the ends of a rope are cut, they tend to unravel and fall apart. You could tie an overhand knot in the end, but knots are bulky and can come apart.

For synthetic ropes, it’s best to melt or FUSE the ends using high heat. Trim off the ends, wave a flame underneath and the ends will melt together. CAUTION: the rope will stay hot for some time, so don’t touch until it cools.

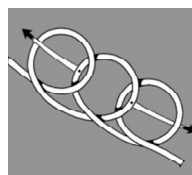
Natural fiber rope should be whipped using a much smaller line or twine. Whipping is a series of circles or knots at the end of the rope pulled and held tight to keep the rope from unraveling. The process below is called “common whipping” and can (and should) be done on synthetic rope like your practice rope. Try whipping it.



# SHEEP SHANK

(none)

TYPE	PROS	CONS
Other	Fun to make	Must continue to have tension No practical reason to use it
USES	Shortens a rope. Bypasses a rope’s weak point.	
SCOUTING	Pioneering MB	



The sheepshank is an interesting knot to learn and once was a Scout requirement. Although the Pioneering Merit Badge still includes it (the reason it’s included here), it is our suggestion that you should never actually use it. It’s too prone to failure, especially in new modern ropes, and therefore dangerous.



# Level 3: Rookie – Lashings: GREEN

This level is all about keeping things together, especially poles, spars, branches, etc. You can use lashings to build all kinds of structures and camp equipment. You will need 2 or 3 poles (spars) to practice. Suggestion: practice on square spars to keep things from rolling around. Once you've learned the knot, move to round spars or tree limbs to build pioneering projects.

## BASIC TERMINOLOGY

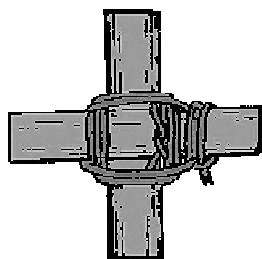
Frapping Turns: fraps are the turns of rope around the lashings (not the object) to squeeze the wraps tightly to the spar

### SQUARE LASHING

(none)

TYPE	PROS	CONS
Lashing	Used on load bearing	Wraps and fraps must be very tight or poles will slip
USES	Building structures and camp equipment	
SCOUTING	1 <sup>st</sup> Class, Pioneering MB	

Square lashings are used on the vertical and horizontal poles, i.e. those at right angles, of a structure and are meant for load bearing. Spars must be touching. The key to making a good square lashing is how tightly you can keep the wraps and fraps while making it. The frapping turns make the wraps even tighter. See page 396 for steps to making this lashing.

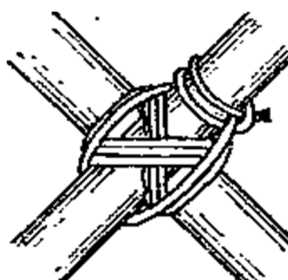


### DIAGONAL LASHING

(none)

TYPE	PROS	CONS
Lashing	Use for cross bracing Use when there are gaps	Not meant for load bearing
USES	Building structures and camp equipment.	
SCOUTING	1 <sup>st</sup> Class, Pioneering MB	

The close cousin to the Square lashing is the Diagonal lashing. Use this lashing for any angle other than right angles. Beginning with a timber hitch is important to pull the spars together. The Diagonal lashing isn't as strong or secure as the Square lashing so use it only for bracing and non-load bearing support. See page 398 in your Handbook for steps to tying.

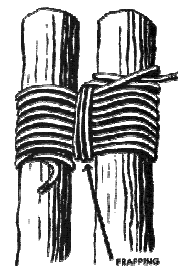


### SHEAR LASHING

(Shear Lashing)

TYPE	PROS	CONS
Lashing	Allows poles to open up	none
USES	Building structures and camp equipment	
SCOUTING	1 <sup>st</sup> Class, Pioneering MB	

Shear lashings are used to keep two poles together, mainly at the ends, and are used for making A-Frames and the Tripod lashing (below). If you want to extend the length of a spar, then use the Round Lashing (over). See page 397 in your Handbook for steps on making this lashing.



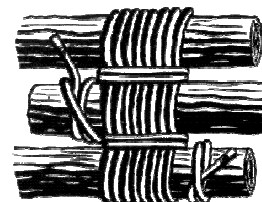
### TRIPOD LASHING

(none)

TYPE	PROS	CONS
Lashing	Allows poles to open up	none
USES	Building structures and camp equipment.	
SCOUTING	1 <sup>st</sup> Class, Pioneering MB	

Extending the Shear Lashing to three spars creates a tripod to hang pots over fires or the beginnings of a tepee. See page 399 in your Handbook for steps on making this lashing.

Option: the Handbook shows the middle spar extending in the opposite direction. If you find it difficult making a tripod, try turning all 3 spars the same way.

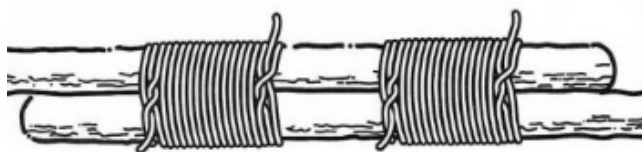


## ROUND LASHING

(none)

TYPE	PROS	CONS
Lashing	none	Lashings must be tight or will slip
USES	Lashing two poles together to make a longer one.	
SCOUTING	none	

When you need a longer spar but don't have one, use the Round Lashing to tie two shorter spars together. To keep it sturdy, make two lashings on parallel poles. Since there are no frapping turns, you must make the wraps as tight as possible. Wedges or a lashing stick should be used if personal safety is a concern as this lashing is not as secure as a shear lashing. See page 400 in your Handbook.

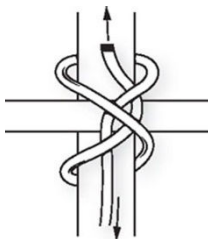


## TRAISSON KNOT

(none)

TYPE	PROS	CONS
Lashing	Holds tight Not Bulky	May be hard to release and have to be cut
USES	Holds two sticks together perpendicularly, like kite sticks.	
SCOUTING	None	

If you don't need all of the wraps that Square and Diagonal lashings provide, use this knot to easily hold two sticks together. It is based on the Constrictor Knot, which you'll find in Level 4. This is not a load bearing knot. Once pulled tight, the ends may be trimmed.



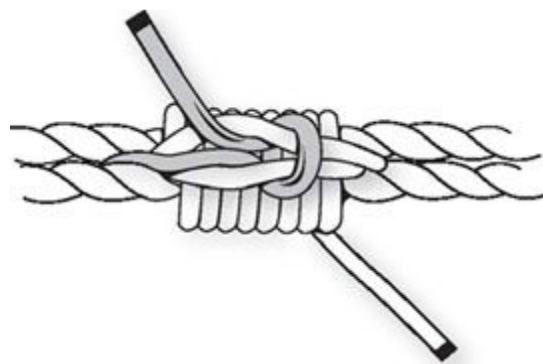
## SEIZING

(none)

TYPE	PROS	CONS
End Work	Uses rope's own friction to hold it	none
USES	Keeps two parallel ropes tight together. Used to create an eye.	
SCOUTING	none	

Seizing keeps two ropes side-by-side using the rope's own friction to keep them from moving. By turning a rope's end back on itself, you can create an "eye".

The method of making this knot (and why it's included in this section) is exactly like a shear lashing except instead of spars you use the rope itself. Begin with a clove hitch on one rope, wrap enough turns to equal twice the rope's diameter, make two frapping turns and pull tight. End by coming up and under one frapping turn, over and back down under the other frapping turn.



## PACKAGE TIE

(Parcel Tie)

TYPE	PROS	CONS
Lashing	Holds the contents of a object together Creates a handle	Can use a lot of string
USES	Bundling packages, books, sleeping bags, etc.	
SCOUTING	none	

The Package (or Parcel) Tie is included in this section because lashings are all about keeping things together. In the days before adhesive tape, packages, meat and bundles were tied up with twine and string. It's still good to know because you might need to carry several small boxes, books, or even your sleeping bag if you've lost the small sack that came with it.

There are many ways to tie parcels; books and websites differ. For this level, we're letting you choose your own method to learn. For an excellent example, visit <http://www.animatedknots.com>.



From Animated Knots by Grog

# Level 4: Apprentice – Advanced Knots: BLUE

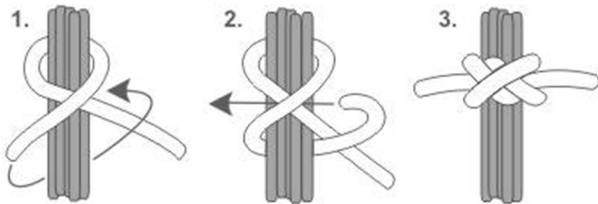
You've come to a very practical level of knots. Need to keep a bag closed? Use the Constrictor Knot. Need to hold items down on the top of your truck? Use the Trucker's Hitch. Need to pull on some rope but can't get a good grip? Find a branch and make a Marlinespike Hitch. When faced with a problem, pull out your knowledge of knots and solve it. This is what Advanced Knots are for.

## CONSTRICITOR KNOT

(Gunner's Knot)

TYPE	PROS	CONS
Binding	Easy tightens around an object	May be impossible to remove without cutting Fails against a flat surface, needs a curved
USES	Quick whipping on frayed ropes Ties the neck of a sack or bag Temporary hose clamp	

The constrictor knot deserves to be more widely known. It stays tight far better than a clove hitch. So good, in fact, you may have to cut it to release it. It is typically used in string and twine but can also be used in small cord. You can use it when starting or ending a lashing if the clove hitch (which it's based on) doesn't hold. Adding a "slip knot" to the final tuck will help to release it.



## MONKEY'S FIST

(Monkey's Paw)

TYPE	PROS	CONS
Decorative	Weighted end	None
USES	Key Fobs, Knife Fob, Heaving Line.	

Once you learn to tie this knot, you'll be very satisfied. It's both a decorative knot and a weighted knot for a heaving line. You can leave the inside hollow or add a weighted object inside to increase its mass. You can also tuck the working end inside. Give yourself time and patience in making this knot and seek help from those who have done it before if you find you're having problems.

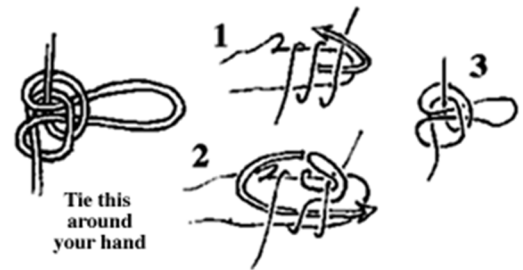


## BUTTERFLY LOOP

(Alpine Butterfly, Lineman's Loop)

TYPE	PROS	CONS
Loop	Easily formed in middle of rope Non-jamming	none
USES	Fixed loop on the bight	

You've already learned one loop: bowline. But what if you need a loop in the middle of the rope as a hand or foot hold? The Butterfly is quickly made and won't slip or jam. It can be pulled from either direction, too. There are many ways to make it. The "over the hand" method is shown here.



## MARLINESPIKE HITCH

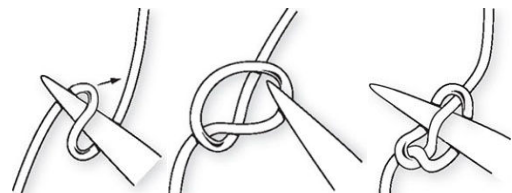
(Boat Knot)

TYPE	PROS	CONS
Hitch	Quick to make and release	Temporary, not stable unless loaded
USES	Using a metal bar, use to pull rope.	

A Marlinespike is a small metal tool used to tie and untie knots. But you can use any strong tool like a wrench or screwdriver or even a dowel. When you want to pull on a twine or small cord to tighten it but can't get a good grip, this hitch is quick to make



After forming the hitch, pull on both ends to tighten. Don't load the working end or it will capsize and jam.



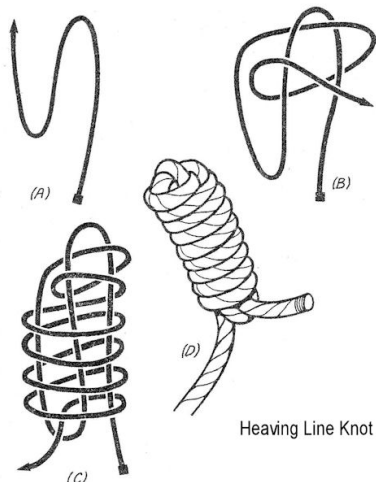
# HEAVING LINE KNOT

(Monk's Knot)

TYPE	PROS	CONS
Other	Simple	None
USES	Add weight to the end of a rope for throwing Shortening rope.	

Often times you want to get rope over a tree branch to pull something up. If there's no convenient object to tie it to, use the rope itself to add weight.

A "heaving line" in boating is the light line tossed to someone on dock so they can then pull the larger mooring line to tie the boat off. But for whatever use, once practiced it can be made quickly.



Heaving Line Knot

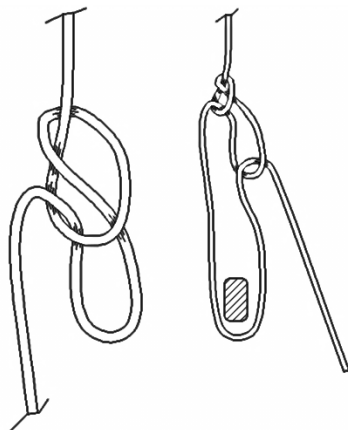
# TRUCKER'S HITCH

(Wagoner's Hitch, Power Cinch, Hay Knot, + more)

TYPE	PROS	CONS
Hitch	Makes a rope very tight. Uses leverage like a pulley	Can produce excessive wear on rope
USES	Tying down loads, tightening tent cords, etc.	

This compound knot is perfect for keeping a rope tight and can be used to secure loads on trucks among other things. The power to tighten comes from the crude block and tackle that the working end and loop makes. There's a theoretical advantage of 3-to-1, so make sure your rope is strong enough to take the strain. Since there is no moving wheel like in a real block and tackle, the rope can receive wear and tear if done over and over again.

The loop can be made several ways. We leave it up to you which way to learn it. But you've already learned two ways: butterfly knot and slipped knot. To finish, tie off the end with two half hitches.

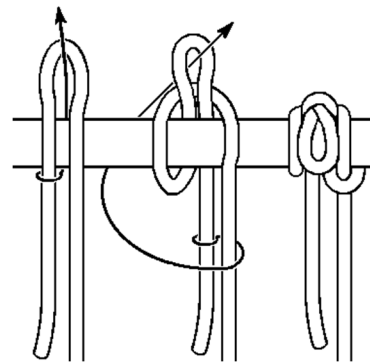


# TUMBLE HITCH

(none)

TYPE	PROS	CONS
Hitch	More stable than Highwayman's Hitch Made in the bight Jam-proof	With every quick release knot, be very careful if safety is an issue
USES	Hitching applications where a quick release is needed.	

Think every knot has been discovered? This knot was created by Dan Lehman in 2004. It can be made on the bight without access to the ends and untied quickly by pulling on the draw loop. It's claimed to be much more stable than the Highwayman's hitch found in most knot books. It's also fun to make because it's a bight within a bight (In-bight-ception. ☺)



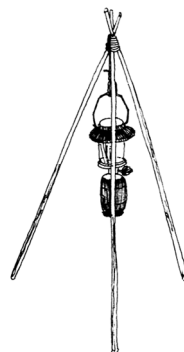
(graphic from notableknots.com)

# CAMP TOOL OR GADGET

TYPE	PROS	CONS
???	Uses your imagination	Limited by your imagination
USES	Helping Around Camp.	

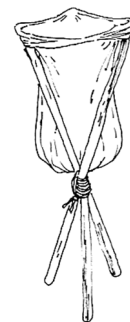
It's time to put your knots to work. Your last task is to make some kind of camp gadget, tool, or accessory to use while you are camping. Ideally, you'll make this from rope, sticks and branches you find (NOT cut down!) in the woods while you're camping.

So ask yourself, what needs to be done? What could be done better? Will it be something you hold in your hand? Or as big as a tent? Will it help just you or the whole troop?



You could do some research and copy someone else. But we encourage you to be creative, resourceful and inventive!

Present your camp gadget suggestion to a Knotmaster Chief for approval then go make it.





# Level 5: Expert – Decorative Knots: **RED**

Knots are an important tool, but they can also be quite decorative. Mats, braids, sinnets, coxcombing, one strand, multiple strands...the options are endless. Often these knots serve both form and function. For example, the Turk's Head can be "a protective covering, a binding, a handhold, or tied around the wrist or ankle as jewelry. It can stiffen weakened poles, gather a neckerchief, or stop a hitch from sliding. You can tie one as a napkin ring or even flatten it out to make a mat." (*The Handbook of Knots*, Randy Penn, pg 190.) Spruce up your backpack, tent, uniform and Troop Hut with a Decorative knots.

These knots are in level 5 because they will take some practice. Carry your practice rope around and practice, practice, practice.

**To Learn:** List 3 Natural and 3 Synthetic Ropes and 1 pro and 1 con for each

## SQUARE SINNET

(Square Crown Sinnet)

## ROUND SINNET

(Crown Sinnet, Spiral Sinnet)

TYPE	Decorative
USES	Pull for zipper, Key Fob, Bracelet, etc.

You may have already tied these sinnets when you were younger. You'll need two cords (start in the middle of each forming 4 ends) or four cords. Try it with 4 different colored cords like your award lanyards.

The square sinnet uses alternating left and right turns while the round sinnet cross over in all left or all right turns. You can start the sinnets attached to something like a key chain or using a starting knot. You can finish by tying, fusing, or tucking the strands back inside itself.

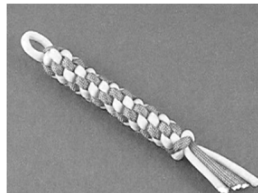
If you use paracord, you can use it with or without the internal strands. Without the strands, the cord will lay flatter and may give a more desirable appearance.

For a cylindrical tube, make a round sinnet out of 6 strands.

You can also change from Crown to Round for an even more interesting appearance.



Crown Sinnet



Spiral Sinnet

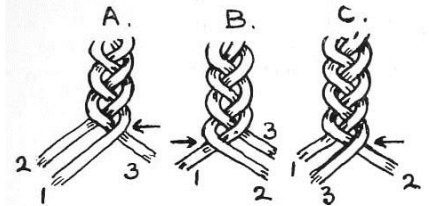
From fusionknots.com

## THREE STRAND BRAID

(none)

TYPE	Decorative
USES	Decoration, pulls, increase strength of a rope

You will need 3 pieces of cord. Tie, whip or tape the 3 ends together and then simply alternate back and forth different colors for a nice decoration. Use small cord for a backpack zipper. Seize, fuse or knot the ends when finished.



## CHINESE BUTTON KNOT

(none)

TYPE	Decorative
USES	Button, FOB for tool

This is a simple little knot that you might find easier to make than the monkey fist from level 4. It is frequently seen in traditional Chinese clothing. There are several button knots out there to learn from. We suggest this site which is where the picture comes from: <http://tinyurl.com/7c77lml>.



# TURK'S HEAD

(Woggle, Slide)

TYPE	Decorative
USES	Neckerchief Slide

A Turk's head, says Wikipedia, "is a decorative knot with a variable number of interwoven strands forming a closed loop." There are almost infinite varieties of a Turk's head with just as many uses. You've probably seen it used as a neckerchief slide, or woggle, so now you can make your own. You can also decorate your walking stick.



Use your hand or a cylindrical object to form the knot. Once you get all of the over-unders made in one turn (called "leads and bights"), follow it around again 2 or 3 times (double or triple), snug up the loops and trim the ends.

There are several places on the web, books and apps showing steps to make a Turk's Head. Here are two suggestions:

<http://tinyurl.com/7jdqqnf>    <http://tinyurl.com/f8b7t>

# CORRA STITCH

(Solomon Bar, Portuguese Sinnet)

TYPE	Decorative
USES	Lanyard, Pull Ring, Strap, Wrist Band, Rope storage.

This "stitch" is a series of alternating half knot stitches around a core. Many companies make paracord bracelets using this stitch, which uses about 10 feet of cord. Use either one color cord or two (for your favorite team?).

Here's a good video by TIAT on how to tie it:

<http://tinyurl.com/7dvm4z2>.

(Have adult supervision if you fuse the ends). Once you get the pattern down it's a snap to make.



# WINDSOR

(none)

TYPE	Decorative
USES	Neck Tie.

Wearing a tie will be important as you grow older. You'll wear one for business attire, weddings, job interviews, and most importantly dates. If you don't have one, ask your dad, uncle or other close friend or relative to borrow one and practice in front of a mirror.



Steps to tying this Windsor variation are found in your Boy Scout Handbook on page 391. (Didn't know your Handbook showed how to tie a tie, did you? ☺)

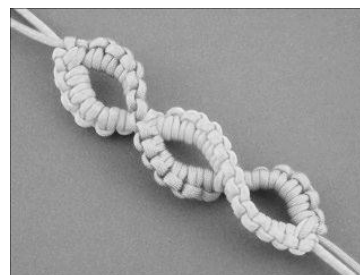
# PICK A DECORATIVE KNOT

TYPE	Decorative
USES	Decoration.

The last requirement for Expert Level is for you to research decorative knots and pick one to learn on your own. Once you've learned a new knot, tie it and show it to the Knotmaster Chief for signing-off.

The internet is full of decorative knot web sites as well as Youtube videos. As a starting point, try TIAT (Tying It All Together). J.D. has made some 100+ Youtube videos of both simple and complex decorative knots such as the DNA Utility Strap pictured below. Use different colored cord to make it even more unique.

[tinyurl.com/chwfttr](http://tinyurl.com/chwfttr) and [www.fusionknots.com](http://www.fusionknots.com).



(photo used with permission)

# Level S-1 – Bowlines: **PURPLE**

“S” levels are specialty knots. After having finished “Level 5: Expert”, you may begin any specialty knot level you like. When you earn two or more Specialty levels, you will be a Guru Knotmaster. This is a requirement for moving on to the last level, Level 6: Grand Knotmaster.

The bowline is aptly named the “King of Knots” and there are many varieties. In this level you’ll learn eight. Some are more stable and useful than the normal bowline. One is not as stable. The bowline can even join two ropes. And when in trouble, you might need to learn the one-handed bowline.

## Double Bowline

(Round Turn Bowline, Double-Knot Bowline)

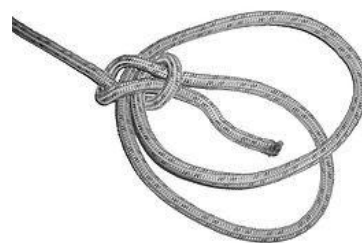
The Double Bowline is a more secure loop, especially if the rope is slippery. Instead of just one turn before the “rabbit comes out of the hole,” make a double loop for the “rabbit” to go through.



## Portuguese Bowline

(French Bowline)

Where the Double Bowline (left) makes a round turn for the “rabbit” to go through, this time the “rabbit” will come in and out of his hole twice before going around the “tree”. This bowline will make two loops just like the Bowline on a Bight and the loops can be adjusted to equal size after the final knot is formed.



## Bowline on a Bight

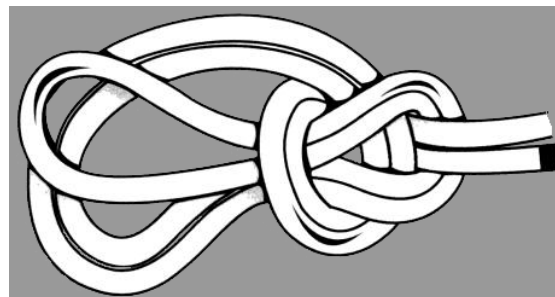
(Bowline in the Bight)

When you need a secure loop in the middle of the rope, this knot will do the trick. You can use this as a foot step in a rope or as a seat to be hoisted up in. Double the rope up and begin to make a bowline. But after the “rabbit” goes through the whole, take the bight and pass it around the loop and back up to the standing ends. When finished, you’ll have two loops to use either as a hoist or an anchor point.



## Triple Bowline

Need one more loop in your bowline? Here you go. This bowline is formed in the bight but ISN'T the Bowline on a Bight. Double up some rope and form a bowline just as you would with one strand. After the “rabbit” bight goes around the tree and back down the hole, make sure it is long enough to form another loop just like the loops already made. Or you can make the loops different sizes if you need three different anchor points.

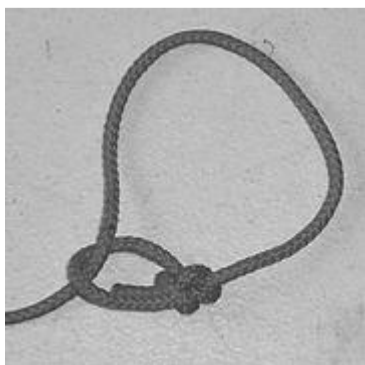


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## Running Bowline

This bowline is tied around its standing part. Use it to make any loop size you want. Unlike a regular bowline, it will slip and tighten down, so use it only for that purpose. It is a type of noose, but can easily be undone and won't bind.

To make it, either tie the bowline around itself, or easier still, make a bowline and pull a bight through the finished loop.

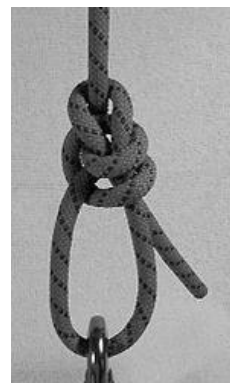


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## Water Bowline

This knot is used in wet conditions where other knots may slip and jam. It may look like the Double Bowline, but the "rabbit" actually goes up through a clove hitch instead of two loops.

To form this knot, begin to make the "clove hitch in the bight" as you learned in level 2. Move the working end (rabbit) up through the clove hitch, around the tree and back down through the clove hitch and snug tight.



---

## Bowline Bend

There's nothing really unique about this bend. It's simply two bowlines joined together through their bowline loops. It's useful when the ropes you are joining are very different in diameter or type.



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## One-Handed Bowline

Everyone you show this to will want to know how to do it. It does have a practical purpose: what if you needed to be hoisted up on a bowline but only had one hand to tie it? The steps to doing this might be difficult to follow without pictures. So look it up on the web or ask someone who knows it to show you. Practice, practice and practice and then race a buddy to see who can finish first.





## Level S-2 — Splicing/Whipping/Mats: **ORANGE**

“S” levels are specialty knots. After having finished “Level 5: Expert”, you may begin any specialty knot level you like. When you earn two or more Specialty levels, you will be a Guru Knotmaster. This is a requirement for moving on to the last level, Level 6: Grand Knotmaster.

This section contains a variety of specialty items. You will need to procure twisted rope for the splices, longer rope for the mats and whipping line for the end work. See your Knotmaster Chief for supplies.

The four knots below are ways of manipulating “laid” or “twisted rope”. Twisted rope consists of three strands of smaller rope twisted together to make a larger, stronger one. (The smaller strands may even be made from even smaller ropes twisted together.) Since these ropes must be “unraveled”, it is suggested that you whip or fuse each of the smaller strands so they don’t come apart. Then you’ll be able to practice with the same rope over and over again.

### Back Splice

(End Splice)

This splice returns the ends of a rope back into the rope without forming a loop. It’s used in place of whipping and is mostly done on natural fiber rope. The rope end will almost double in diameter



### Short Splice

If your rope isn’t long enough, splice in another piece. Use only the same size and kind of rope. This splice will increase the size of the rope so it won’t run through a pulley. Make 3 tucks in natural rope and at least 5 in synthetic rope.



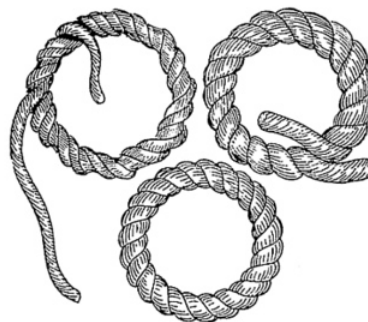
### Eye Splice

An eye splice forms a loop by turning the end back on itself and splicing the rope itself. It retains the strength of the rope, too. Make 3 tucks for natural fiber rope and 5 or more for synthetic



### Grommet

A grommet is a round ring of rope and can be used for handles, toys, and many other uses. Unravel rope about 3-½ times longer than you want the circumference of the finished grommet.



## A Note on Whipping Knots

A Whipping knot, as you may know, secures the end of a rope from fraying or unraveling. It can be more secure than simple fusing. It is suggested that you whip larger diameter ropes even if you have fused them.

You showed how to do a common whipping in Level 2 and as a Tenderfoot. Here are some more interesting (and easier) patterns to whip your rope.

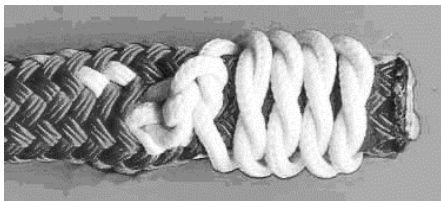
## French Whipping

This whipping is easy to make. It is simply a series of half hitches which make the interesting pattern around the rope. You can use this on your walking stick either as decoration or in the area where you hold the stick to get a better grip.



## West Country Whipping

Where the French whipping above does the half hitches around the cord, the West Country whipping does the half hitches alternating front to back. You can end this whipping in many ways, but note that the traditional square knot (shown below) can come undone over time.



## A Note on Mats

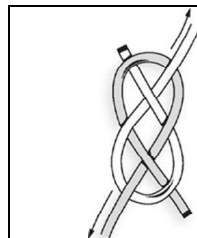
Small rope mats make really good tablemats and hot pads. Larger ones can be used as stair treads, chair covers and more. Here rope is used for protection, decoration and anti-slipping purposes. Rope is SO versatile.

## Carrick Bend Mat

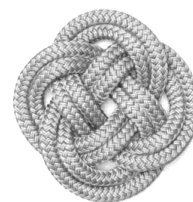
The name of this mat comes from the bend of the same name. The Carrick Bend wasn't covered in this KMP, but is a good bend to learn.

The mat version simply follows the Carrick Bend around the design one more time. Interestingly, this is a Turk's Head flattened out. The mat can be worked into a 3-Dimensional design to go around a pole.

To join the ends, you can fuse them if the material can be melted. Or you can attach the ends using needle and thread, glue or twine using constrictor knots. Whichever you choose, make sure it's under a turn so it can't be seen.



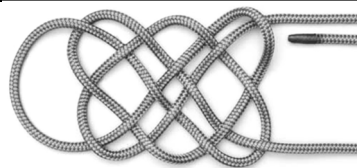
Carrick Bend



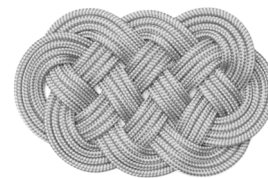
Carrick Bend Mat  
(from animatedknots.com)

## Ocean Plait Mat

"Plait" means braid. And with this mat we're getting fancy! This one has 4 turns, but you can certainly have more if you don't make each turn so tight. Animatedknots.com has an excellent video on making this mat. Finishing is done the same way as the Carrick Bend mat above.



The first turn pattern of the Ocean Plait. The rest of the knot is following this original setup around 4 times and snugging up.



www.animatedknots.com

Finished Product

# Level S-3 – Fishing Knots: **TURQUOISE**

“S” levels are specialty knots. After having finished “Level 5: Expert”, you may begin any specialty knot level you like. When you earn two or more Specialty levels, you will be a Guru Knotmaster. This is a requirement for moving on to the last level, Level 6: Grand Knotmaster.

Fishing is a great pastime and can be done virtually anywhere in the world. This level coincides with the Fishing Merit Badge. Knots 1-5 are from the Merit Badge requirements. Although one can (and should) use rope to learn these knots, the final test for knots 1-6 should be done with fishing line.

## Improved Clinch Knot

<b>USES</b>	Fishing line to a hook, lure or swivel.
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The basic clinch knot is required for the Fishing Merit badge. But both the Fishing MB book and the KMP uses the “improved” version. It is superior and only adds one extra step, the extra tuck under the final turn.

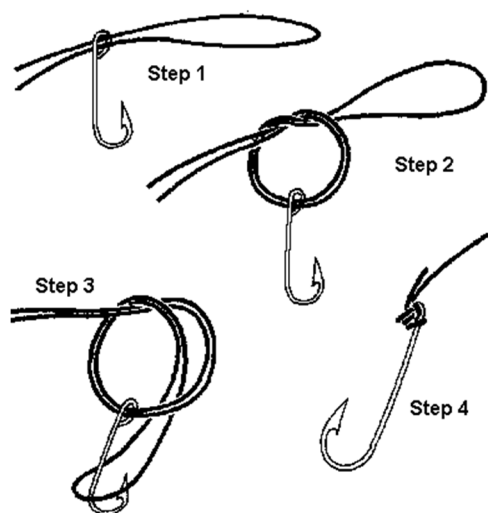
When using fishing line and lubricant, the knot will reform (capsize) when it is pulled tight so that it gets a good grab on the hook or lure.



## Palomar

<b>USES</b>	Fishing line to a hook or a fly to a leader.
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This is considered one of the stronger, more reliable fishing knots. And it might be easier to tie than the clinch knot above.



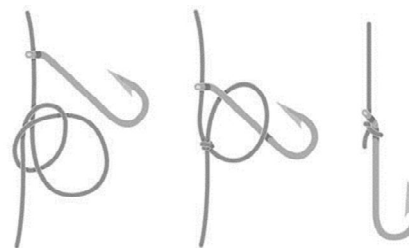
## Turle

Major Turle's Knot

<b>USES</b>	Fishing line to a fly or leader.
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The name of this knot comes from William Greer Turle, a 19<sup>th</sup> Century fisherman who popularized but didn't invent it. It is NOT called a Turtle Knot like the Merit Badge book would indicate.

Several web sites claim this knot is not a good one to use, but it is small, easy to tie and required for the Fishing Merit Badge.

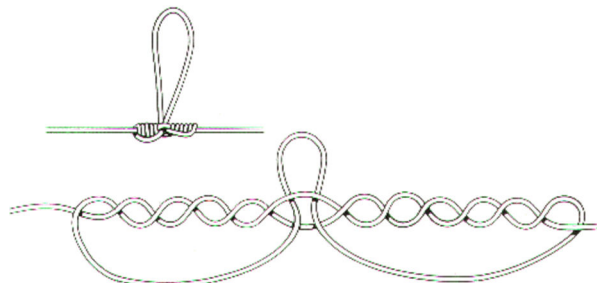


## Blood Loop

Dropper Loop, Barrel Knot

<b>USES</b>	Creating a loop in the middle of line as an attachment point for additional flies, baits or jigs.
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You'll find on the internet that this bend is more commonly called a Drooper Loop. “Blood” loop comes from its similarity to the Blood Knot (not a part of the KMP). Interestingly, the requirement for the Fishing MB description in the Fishing MB book shows and describes the Blood/Barrel Knot, not the Blood Loop. Use sources other than the MB book to learn this loop.



# Double Surgeon's Loop

## Surgeon's Loop

**USES** Creating a loop at the end or in the middle of a line.

This is an easy way to form a loop in your line. The “surgeon” part of the name comes from the Surgeon's Knot you learned in Level 1. It's an overhand knot with an extra “tuck”. The loop portion comes from doubling up the line before you make the knot. We call this a “bight” in the KMP.



# Arbor Knot

**USES** Attaching fishing line to the arbor of a fishing reel.

Your fishing line broke and now you have to put new line on the reel. This knot gets the fishing line started on the reel. It continues to get tighter on the arbor the more it's wound up.

You'll want to tighten the overhand knot at the end first, before you tighten up the main overhand knot.



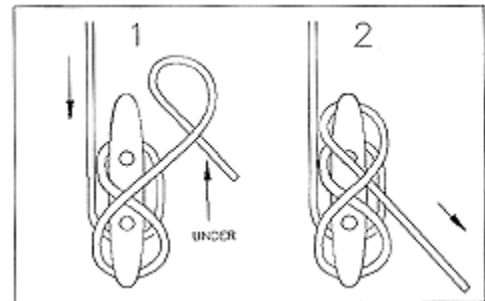
## A Note on Hitches

The following hitches are not part of the Fishing MB program since one can certainly fish without a boat. But if you do use watercraft, these knots are good for both out in the water and at the dock.

# Cleat Hitch

**USES** Mooring a boat to a dock.

The thing a boat is tied to at the dock is called a “cleat”, hence the name. The picture below only has a few crossing turns. You may need to do more based on the load of the boat and the size of the rope and cleat.



# Anchor Hitch

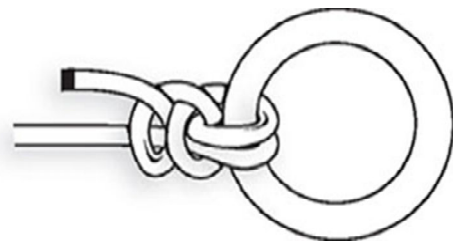
Fisherman's Hitch, Fisherman's Bend

**USES** Tying rope to an anchor.

You really don't want to lose your anchor once you throw it overboard. As you learn this knot, note how similar it is to the Round-Turn and Two Half-Hitches you learned back in Level 1.

You'll find examples of this knot on the internet with the name “Anchor Bend”. But it's not a bend since doesn't join two ropes. The term is a throwback to when “bend” just meant “tied to”.

Learn this knot with two half hitches instead of just one as is shown on several websites. It is more secure.





# Level S-4 – Climbing: **BROWN**

“S” levels are specialty knots. After having finished “Level 5: Expert”, you may begin any specialty knot level you like. When you earn two or more Specialty levels, you will be a Guru Knotmaster. This is a requirement for moving on to the last level, Level 6: Grand Knotmaster.

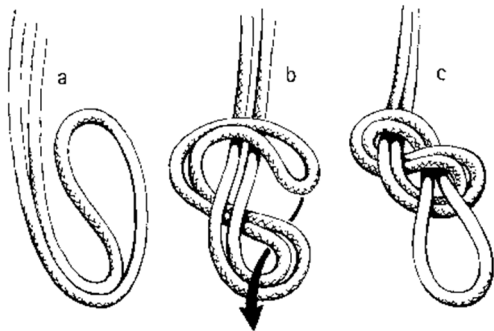
Climbing is a great sport and very satisfying when done in a safe environment. This level coincides with the Climbing Merit Badge. **NOTE: DO NOT** use these knots for climbing and rappelling until taught by a qualified instructor and with the appropriate equipment. Serious injury or death could result.

## Figure Eight on a Bight

Figure Eight Loop, Flemish Loop, Flemish Eight

<b>USES</b>	Loop will not slip or come loose. Easily makes a loop in the middle of the rope.
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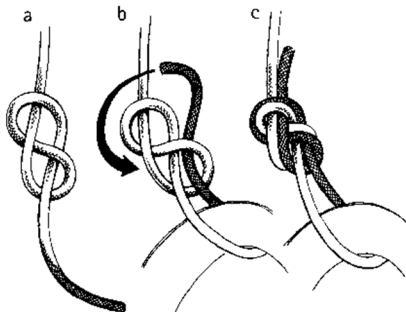
This knot is formed in the exact same way as the Figure Eight you learned in Level 1 except you use a bight, or doubled over rope, instead of a single strand.



## Figure Eight Follow Through

<b>USES</b>	Attaching a Figure Eight loop to an object like a harness where you can't go over one end.
-------------	--

The Figure Eight on a Bight is useful if the loop can be clipped onto. If you need to make the loop around an object, and you can't pass the finished loop over one end of the object, this “follow through” is the one to use. Simply create a figure 8 knot, wrap the working end around the object, and then follow the figure 8 around with the working end.

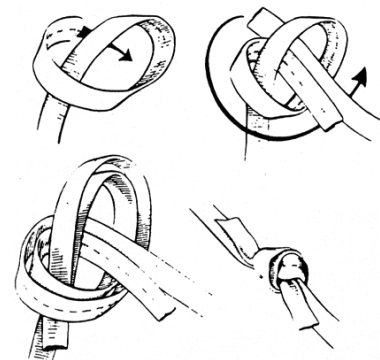


## Water Knot

Tape knot, Ring bend, Grass knot, Overhand follow through

<b>USES</b>	A bend to join two webbings together.
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The Water Knot is a bend and is used in climbing to join webbing together. It might be difficult to untie once a load is put on it. For security, the ends should be backed up with safety knots.



## Double Fisherman's Knot

Grapevine Bend, Double Englishman's Knot

<b>USES</b>
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You learned the Fisherman's Knot in Level 2. This knot has added turns to more securely join the two ropes. A Triple and Quadruple version is also used.



# Safety Knot

<b>USES</b>	??? Your turn to research. ☺
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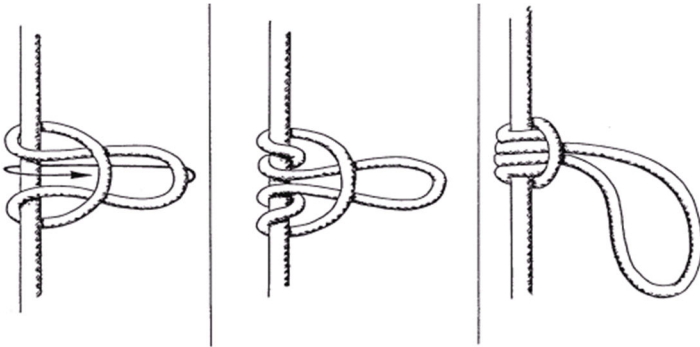
The KNP is going to let YOU research what this knot is and when and where you use it. The information can be found online and in the Climbing MB Book.

## Prusik Knot

Triple Sliding Hitch

<b>USES</b>	Attach a loop of rope to another rope.
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This knot secures a smaller loop or rope to another rope. It can be slid up or down the rope by releasing or adding a load to it. It is used either as a hand/foot hold or to attach equipment to a rope.

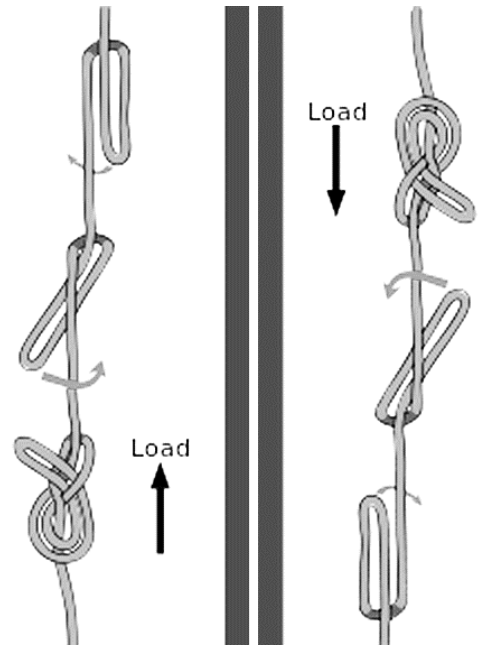


# Directional Figure Eight

In Line Figure Eight

<b>USES</b>	Creates loops that can be used for handhold or to attach equipment.
-------------	---

This figure eight loop is directional and can be made in the middle of the rope, i.e. on a bight. "Directional" means it can only be loaded from one direction. If you load it from the wrong direction, it can capsize and slip.



## Munter Hitch

Italian Hitch, Crossing Hitch

<b>USES</b>	Commonly used in belaying for controlled descent when rappelling.
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This hitch is used with a locking carabiner on the harness to control one's descent. Only use after training. It is not part of the Climbing Merit Badge. Other equipment is commonly used instead of this hitch.



# Level 6: Grand Knotmaster

You've arrived at the last level of Troop 1011's Knotmaster Program. You've already learned 58 knots, which is probably 55 more knots than most people know. Now it's time to show what you've learned. This level is similar to earning the Eagle Rank. You'll learn some new knots, research and choose some knots on your own to demonstrate to others, create a project and then test your knowledge on everything you've learned so far.

This level will take time and work and few will complete it. But those that do will receive the highest colored lanyard and be able to call themselves Grand Knotmaster.

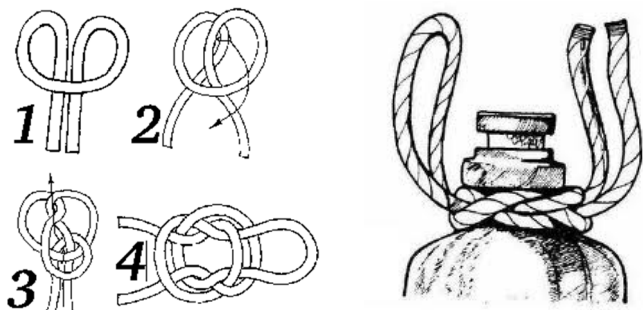
**REQUIREMENTS:** Complete Levels 1-5, two specialty levels and the requirements below.

## Jug Sling

(Bottle Sling, Hackamore Knot, Beggarman's Knot)

<b>USES</b>	Suspend bottles and jugs.
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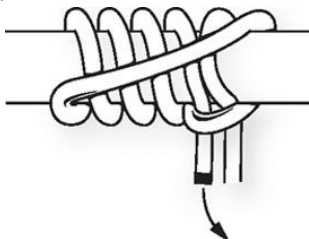
Use this knot to carry your water bottle around. Use the web or an app to learn this knot better than the diagram below.



## Icicle Hitch

<b>USES</b>	Gripping slippery surfaces.
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This knot really holds a grip. It can grip a smooth surface so tightly that someone can hang from it when it's tied to a vertical tapering shaft ... which is exactly what you are to do. Learn to tie it, then show off its strength at a troop meeting.



## A Dress Tie Knot

(Knotter's Choice, but not Windsor or Four-In-Hand)

<b>USES</b>	Looking Good.
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What's your fancy? There's the Pratt, Atlantic (shown), Prince Albert, Christensen, Small, even the Bow Tie. It's your pick. Researchers Thomas Fink and Yong Mao used mathematics to discover there are 85 possible variations with a conventional tie. So you have a lot to choose from.



Learn one besides a Windsor or Four-in-Hand, and demonstrate it for the Knotmaster Chief.

## A Rope Magic Trick

(Knotter's Choice)

<b>USES</b>	Fun.
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The Knotmaster Program has given you opportunities to learn both practical and decorative knots. But rope and knots can be fun, too. "It's not Scouting if it's not fun," and magic can be a lot of fun.

Learn a magic trick and try to stump the Knotmaster Chief. If s/he can't guess how you did it, then you receive credit. (Actually, if you do it well, you'll get credit, just try and amaze us.) And never reveal your magic secrets: it's the code of the Magicians.



# Rope Storage

<b>USES</b>	Keeping things nice and pretty.
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You've got a lot of rope, so how do you keep it from getting all tangled up. You've been carrying your ropes on your carabiner using the Rope Carry Knot. Now it's time to learn a few more. Learn and demonstrate the following coils on a rope 100+ feet long.

1. Figure of Eight Coil
2. Gasket Coil
3. Butterfly Coil
4. Mountain Coil



## Recognizing Knots

During your final test, you'll be asked to recognize 5 randomly selected knots from levels 1 to 5. You must name them and correctly describe their type, use, pro and con.

## Knot Demonstration

During the final test, you will present a knot not found in the KMP. You will demonstrate it first to the Knotmaster Chief and then to the Troop at a Troop meeting. The knot you choose should be interesting, useful and worthy of the Grand Knotmaster level. Relate any history about the knot, its uses, and demonstrate that use if applicable. Finding a knot the Knotmaster Chiefs have not seen is encouraged. Get approval for the knot from the Chief before proceeding.

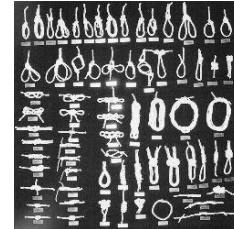
# Knot Board Option #1

Finished Knots

<b>USES</b>	Educational purposes.
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Create a well-crafted and designed Knot Board. Choose at least 20 knots, make and label each and attach to a board. Decorate the sides, edges and add any other info you'd like.

You'll be judged on presentation, accuracy and neatness.



# Knot Board Option #2

Instructional Knots

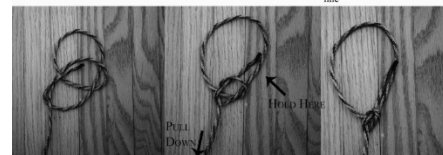
<b>USES</b>	Educational purposes
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Option #1 above is to show 20 or more completed knots. Option #2 teaches someone how to make knots by demonstrating each step of the knot being made. It's like having animatedknots.com shown on a piece of wood.

Pick 5 knots from Level 2 or higher requiring 4 or more steps to make and create a knot board for each. Label each step and each knot and supply interesting information like what it is used for, etc. Use different colored ropes if more than one is involved. You'll be judged on presentation, accuracy and neatness.



1. Throw a loop  
2. Bring the working end through the backside of the loop  
3. Bring the working end underneath the trailing line



4. Put the working end through the loop from step 1  
5. Hold the working end to the loop line and pull trailing line  
6. Pull tight to complete the bowline knot

Primary uses of the bowline knot: The bowline makes a strong fixed-loop knot. It is used in camping, boating, climbing, and everyday life. The bowline gets stronger with tension and is used as a safety harness for climbers, to anchor a boat to a dock, and to rig a rope through camp.