

Summary Report for Individual Task
052-247-1301
Tie Knots, Bends, and Hitches for Rope Rescues
Status: Approved

Distribution Restriction: Approved for public release; distribution is unlimited.

Destruction Notice: None

Foreign Disclosure: FD7 - This product/publication has been reviewed by the product developers in coordination with the Ft Leonard Wood MO/MSCOE foreign disclosure authority. This product is NOT releasable to students from foreign countries.

Condition: You are a member of an Urban Search and Rescue (US&R) team in a US&R environment and are given lengths of life safety rope up to 1/2 inch in diameter, one inch tubular webbing, and 8 mm prusik cord. This task should not be trained in MOPP 4.

Standard: Tie knots, bends, and hitches so that the knots are properly tied, dressed, recognizable, and a safety is applied as required.

Special Condition: None

Safety Risk: Low

MOPP 4: Never

Task Statements

Cue: None

DANGER
None

WARNING
None

CAUTION
None

Remarks: All required references and technical manuals will be provided by the local US&R Command.

Notes: None

Performance Steps

1. Tie an overhand knot (safety knot).

Note: The overhand knot is not a load-bearing knot and is not used as an independent knot for life safety activities and should be set as close to the primary knot as possible.

- a. Form a loop in the rope.
- b. Insert the end of the rope through the loop.
- c. Dress the knot by pulling on both ends of the rope at the same time.

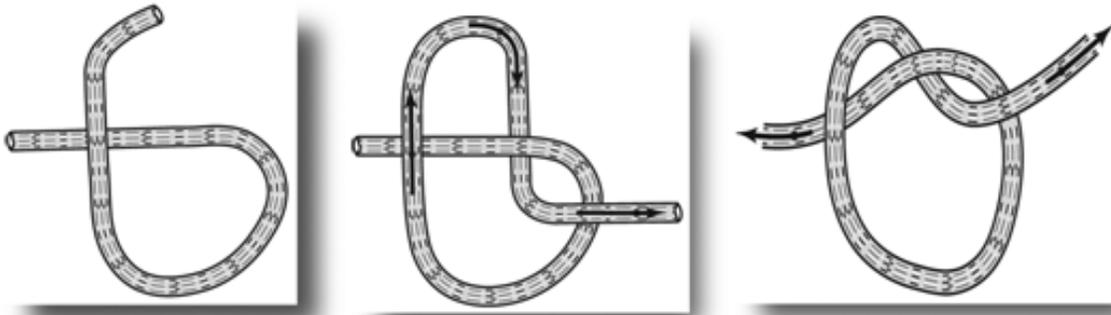


Figure 052-247-1301-1
Overhand

2. Tie a bowline knot.

- a. Make a loop.
- b. Pass the running end of the rope through the loop.
- c. Wrap the running end behind the standing end.
- d. Pass the running end back through the loop.
- e. Secure the running end with back of the formed loop and pull against the standing end to tighten knot.

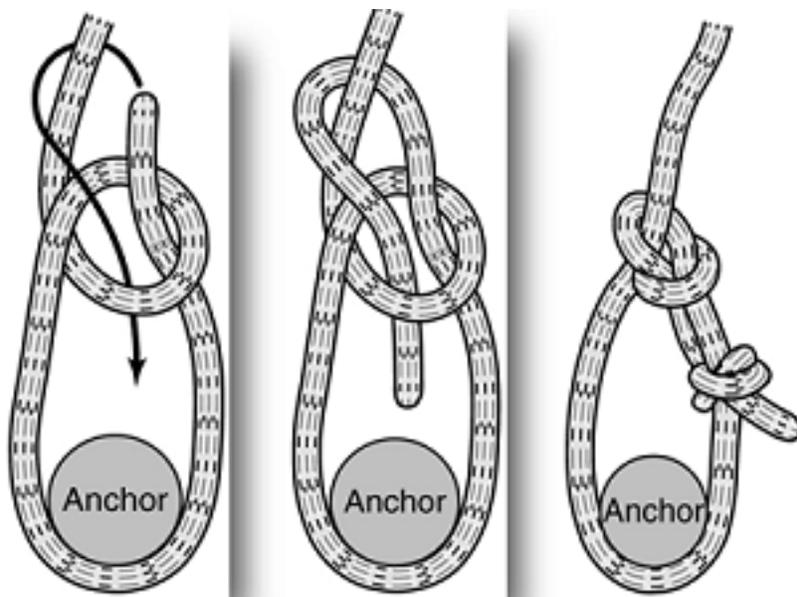


Figure 052-247-1301-2
Bowline

- f. Dress the knot.
 - g. Tie an overhand knot with the running end to the loop around the anchor.
3. Tie a butterfly knot.
- a. Hold one hand thumb up with the palm facing the body.
 - b. Place the rope across the palm.
 - c. Wrap the rope from the top of the hand around the hand to form a loop that crosses in the palm towards the wrist.
 - d. Make another wrap with the rope so this loop is nearest the wrist.
 - e. Pull the middle wrap away from the palm, toward the wrist so it forms a bight.
 - f. Push the bight between the remaining wraps and the palm, towards the fingers.
 - g. Tighten the knot slightly by pulling the bight in one hand and the two legs in the other.
 - h. Set the knot by pulling the two legs in opposite directions.
 - i. Dress the knot.

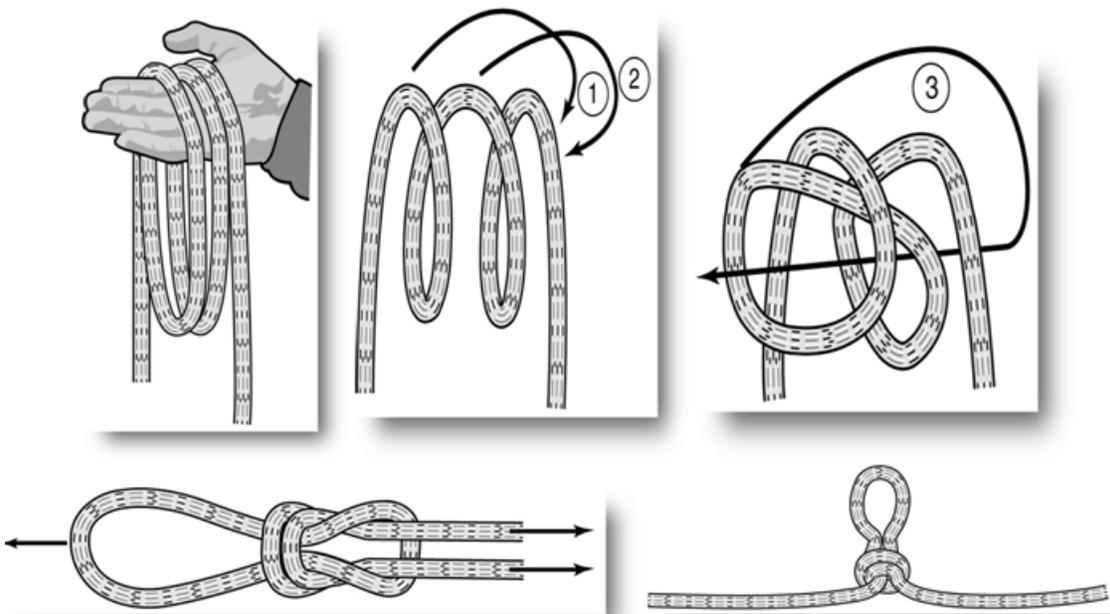


Figure 052-247-1301-3
Butterfly

4. Tie a half hitch.
- a. Form a loop around the object passing the running end around the standing end.

- b. Take the running end through the loop.
- c. Tighten the knot.
- d. Dress the knot and add a second half-hitch for safety.

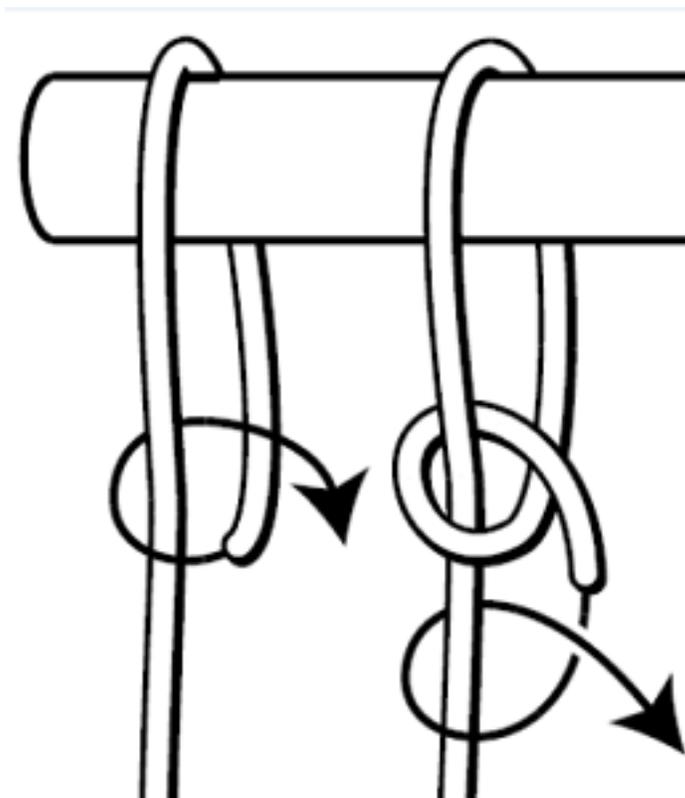


Figure 052-247-1301-4
Half Hitch

- 5. Tie a clove hitch (middle of the rope).
 - a. Form a loop in your left hand with the running end to the right crossing under the standing end.
 - b. Form another loop in your right hand (creating a round turn) with the running end crossing under the standing end.
 - c. Slide the right-hand loop on top of the left-hand loop.
 - d. Hold the two loops together at the rope forming the clove hitch.
 - e. Slide the knot over the object.
 - f. Pull the ends in opposite directions to tighten.



Figure 052-247-1301-5
Clove Hitch (middle of the rope)

6. Tie a clove hitch (end of the rope).

- a. Make one complete loop around the object, crossing the running end over the standing end.
- b. Complete the round turn around the object just above the first loop.
- c. Pass the running end under the upper wrap, just above the cross.
- d. Secure the knot by tying an overhand knot on the standing end of the rope.

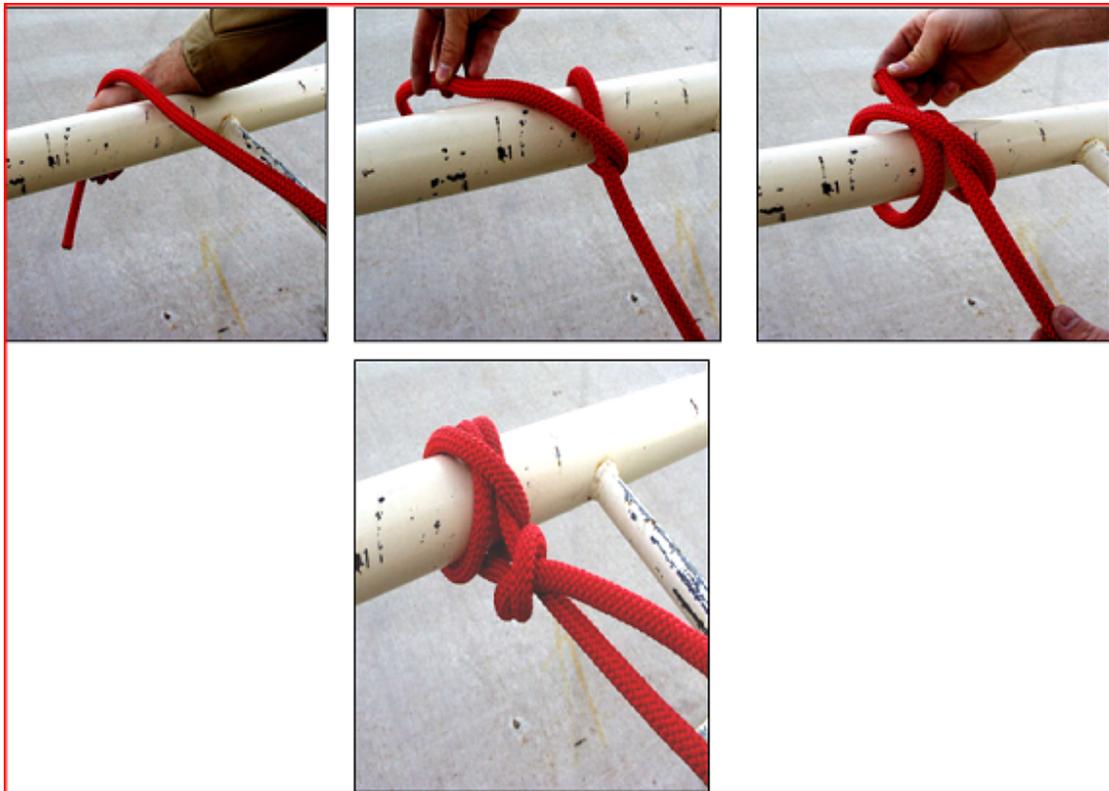


Figure 052-247-1301-6
Clove Hitch

e. Dress the knot.

7. Tie a figure-eight knot.

- a. Make a bight near the end of the rope.

- b. Hold the bight with one hand and wrap the running end around the standing end one full turn to make a loop.
- c. Pass the running end through the original bight.
- d. Dress the knot.

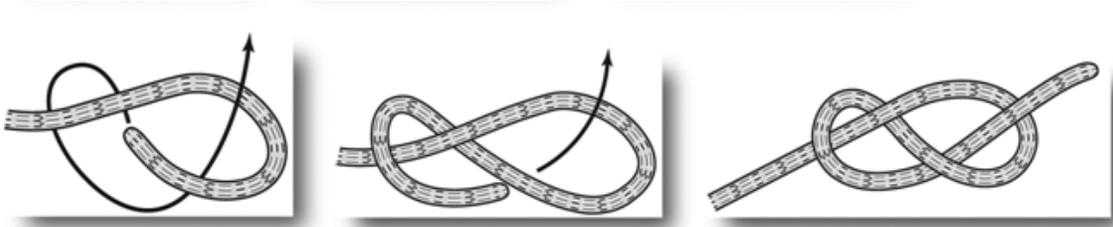


Figure 052-247-1301-7
Figure Eight

8. Tie a figure-eight bend.

- a. Tie a figure-eight knot on one end of the first rope.
- b. Feed the end of the second rope through the figure-eight knot in reverse so it follows the exact path of the first knot.
- c. Pull the knot tight from both ends.
- d. Dress the knot.
- e. Tie an overhand knot on the running end of each rope to the standing end of the other rope.

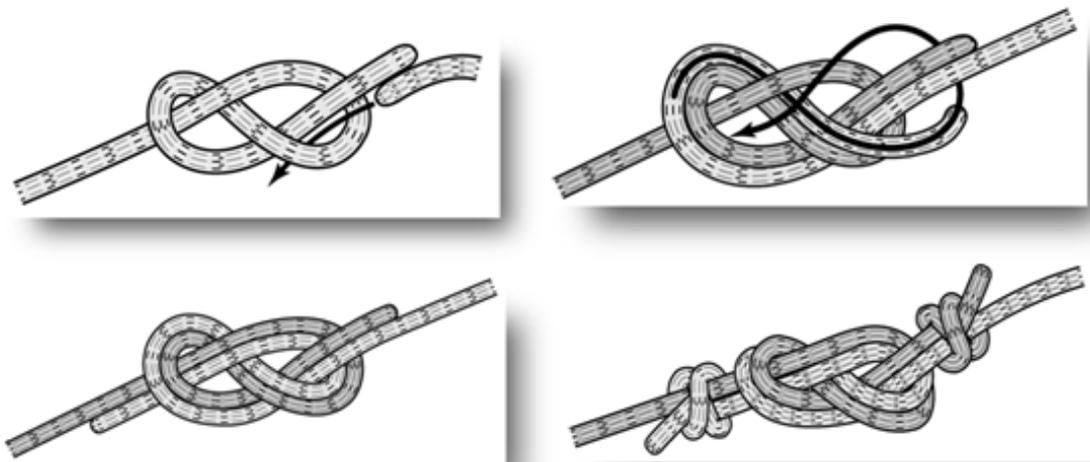


Figure 052-247-1301-8
Figure Eight Bend

9. Tie a figure-eight on a bight knot.

- a. Form a bight approximately 12 inches long on the running end of the rope.
- b. Pass it over the standing end to form a loop.

- c. Pass the bight under the standing end and then over the loop and down through it. (This forms the figure-eight).
- d. Extend the bight through the knot to whatever size working loop is needed.
- e. Tighten the knot by pulling on both ends simultaneously.
- f. Dress the knot.
- g. Secure with an overhand knot.

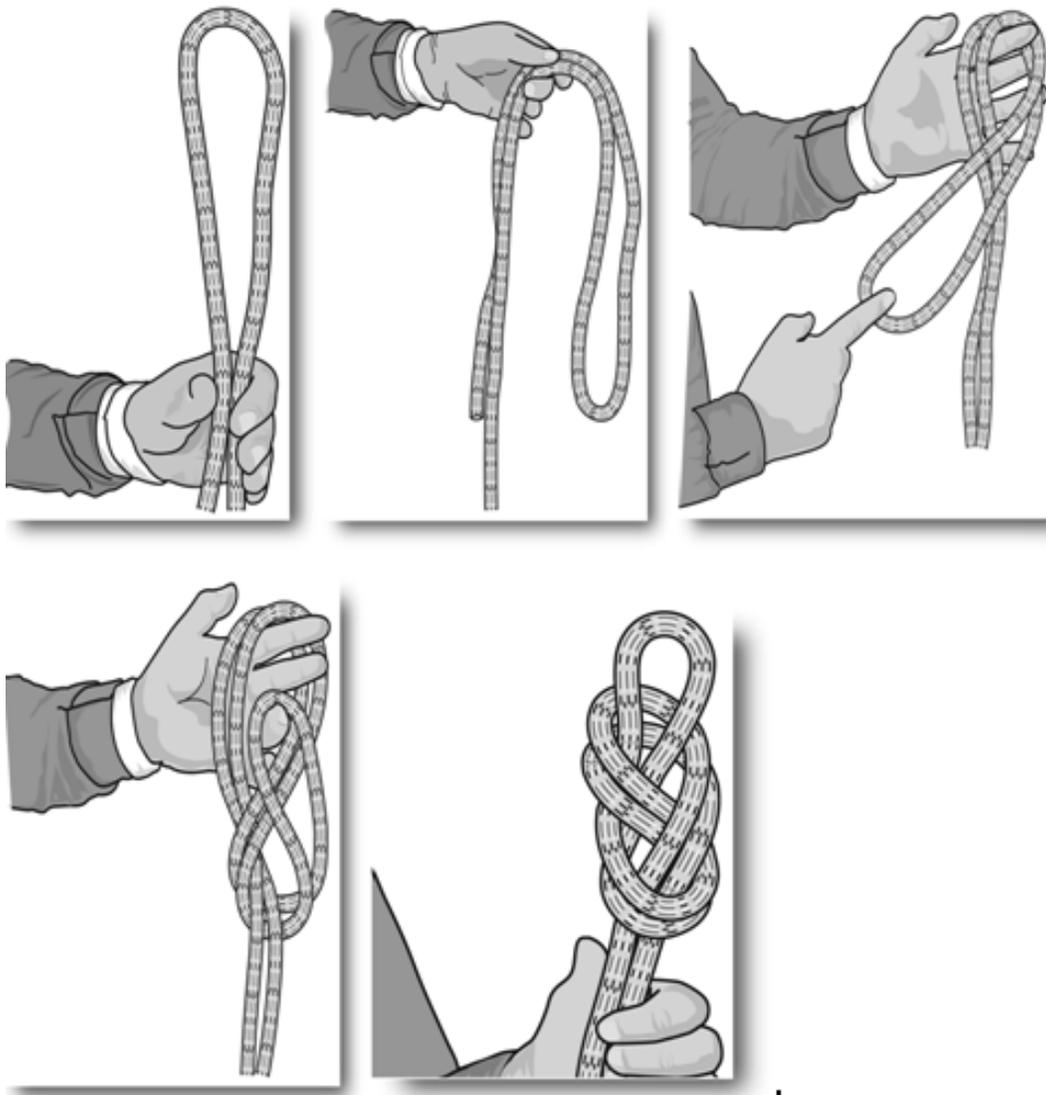


Figure 052-247-1301-9
Figure Eight on a Bight

10. Tie a figure-eight follow through.

Note: Tie the figure eight far enough in from the end of the rope to allow the running end to go around an object being secured and back through the original knot.

- a. Tie a loose figure-eight knot.
- b. Pass the running end of the rope around the object to be secured.

- c. Route the running end of the rope back through the entire original figure eight, but in reverse order.
- d. Exit the knot beside the standing end to complete the knot.
- e. Dress the knot.
- f. Secure with an overhand knot.

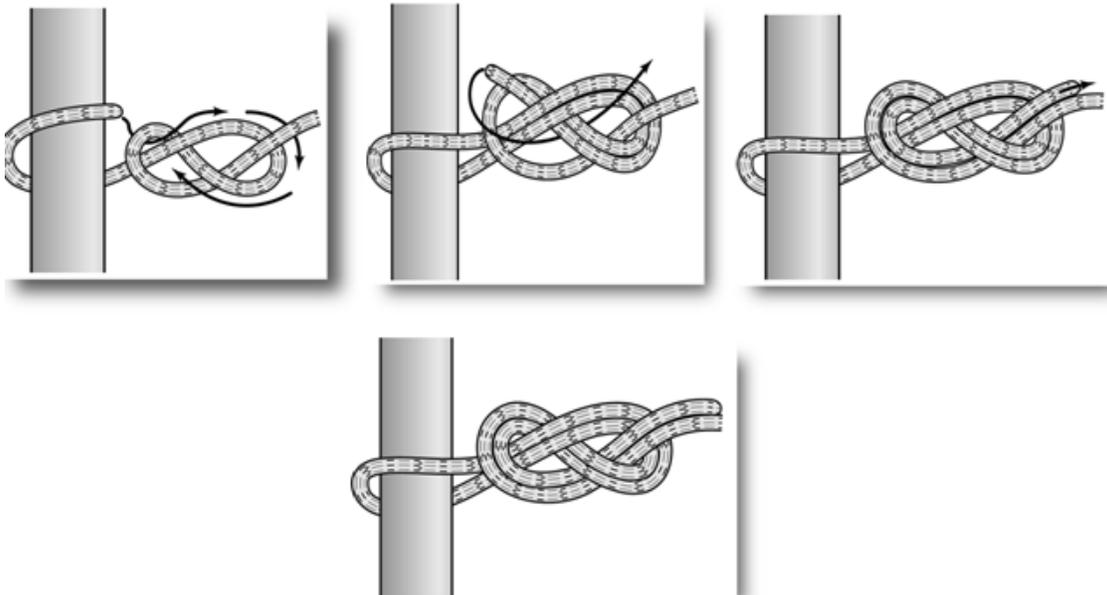


Figure 052-247-1301-10
Figure Eight Follow Through

11. Tie a water knot.

- a. Tie a loose overhand knot with one end of the webbing.
- b. Feed the other end back through the knot, following the path of the first rope in reverse.
- c. Draw tight and pull all of the slack out of the knot.
- d. Dress the knot.
- e. Tie an overhand knot on each remaining tail as a safety.

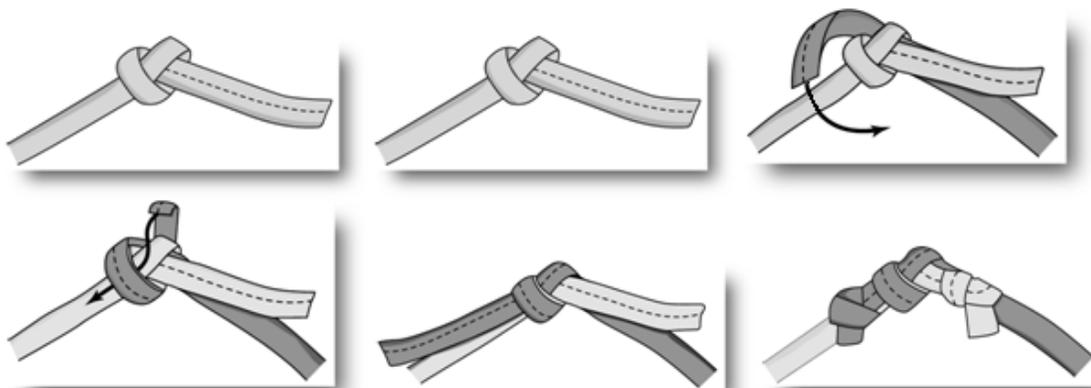


Figure 052-247-1301-11

Water Knot

12. Tie a double fisherman's knot.

- a. Hold two ropes horizontally and parallel to each other, with tails in opposite directions.
- b. Using one tail, form a loop around the other rope so the loop crosses itself.
- c. Continue to wrap the tail end around the same side of the cross two full wraps.
- d. Pass the tail end through the center of its own loops.
- e. Dress this half of the knot.
- f. Repeat the procedure in the opposite direction with the other tail.
- g. Pull the ropes in opposite directions so both knots slide together.
Note: When complete, this knot should have two crosses on one side and four wraps on the other.

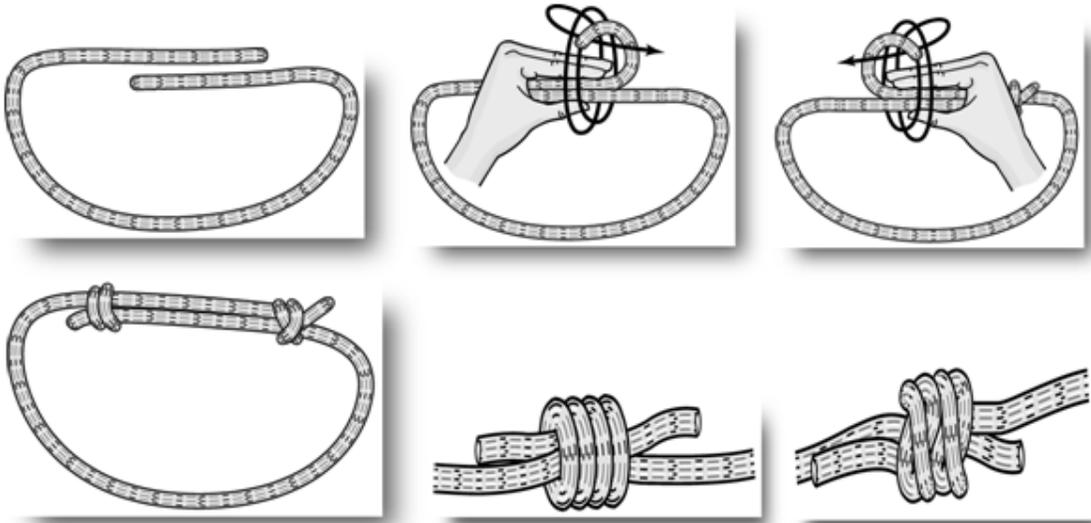


Figure 052-247-1301-12
Double Fisherman's

13. Tie a prusik hitch.

Note: This hitch is formed around a rope using an accessory cord tied into a loop with the double fisherman knot.

- a. Place the prusik cord under the main-line rope.
- b. Wrap the loop of the prusik cord around the main-line rope two or three times depending on the intended use.
- c. Grab the prusik hitch on one side of the knot and pull so that a loop is created with the knot along the side of the loop.
- d. Dress the knot so that there is maximum surface contact between the prusik cord and the main-line rope.
Note: You can tell it is correct when you see parallel lines with no crossover of the prusik cord.

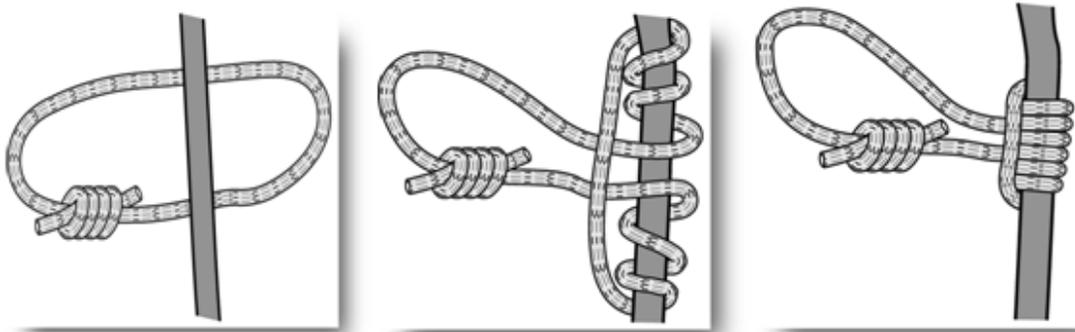


Figure 052-247-1301-13
Prusik Hitch

(Asterisks indicates a leader performance step.)

Evaluation Guidance: Score the Soldier GO if all measures are passed (P). Score the Soldier NO-GO if any measure is failed (F). If the Soldier fails any measure, show him how to do it correctly.

Evaluation Preparation: Setup: Provide the Soldier with all the items listed in the conditions.

Brief Soldier: Tell the Soldier to Tie Knots, Bends, and Hitches for Rope Rescues.

PERFORMANCE MEASURES	GO	NO-GO	N/A
1. Tied an overhand knot (safety knot).			
2. Tied a bowline knot.			
3. Tied a butterfly knot.			
4. Tied a half hitch.			
5. Tied a clove hitch (middle of the rope).			
6. Tied a clove hitch (end of the rope).			
7. Tied a figure-eight knot.			
8. Tied a figure-eight bend.			
9. Tied a figure-eight on a bight knot.			
10. Tied a figure-eight follow through.			
11. Tied a water knot.			
12. Tied a double fisherman's knot.			
13. Tied a prusik hitch.			

Supporting Reference(s):

Step Number	Reference ID	Reference Name	Required	Primary
	IFSTA MANUAL	Essentials of Fire Fighting (6th Edition).	No	No
	ISBN 13: 9781428320567	Technical Rescuer-Rope Levels 1 and 2	No	No
	ISBN-10: 1428324100 ISBN-13: 9781428324107	High Angle Rescue Techniques, 3d Edition 1st Edition George J. Browne, Gus Crist	No	No
	NFPA 1006	Standard for Rescue Technician Professional Qualifications	Yes	Yes
	NFPA 1670	Standard on Operations and Training for Technical Search and Rescue Incidents. 2009 Edition	No	No

Environment: Environmental protection is not just the law but the right thing to do. It is a continual process and starts with deliberate planning. Always be alert to ways to protect our environment during training and missions. In doing so, you will contribute to the sustainment of our training resources while protecting people and the environment from harmful effects. Refer to FM 3-34.5 Environmental Considerations and GTA 05-08-002 ENVIRONMENTAL-RELATED RISK ASSESSMENT.

Safety: In a training environment, leaders must perform a risk assessment in accordance with FM 5-19, Risk Management. Leaders will complete a DA Form 7566 COMPOSITE RISK MANAGEMENT WORKSHEET during the planning and completion of each task and sub-task by assessing mission, enemy, terrain and weather, troops and support available-time available and civil considerations, (METT-TC). Note: During MOPP training, leaders must ensure personnel are monitored for potential heat injury. Local policies and procedures must be followed during times of increased heat category in order to avoid heat related injury. Consider the MOPP work/rest cycles and water replacement guidelines IAW FM 3-11.4, Multiservice Tactics, Techniques, and Procedures for Nuclear, Biological, and Chemical (NBC) Protection, FM 3-11.5, Multiservice Tactics, Techniques, and Procedures for Chemical, Biological, Radiological, and Nuclear Decontamination.

Prerequisite Individual Tasks : None

Supporting Individual Tasks :

Task Number	Title	Proponent	Status
052-247-1307	Ascend a Fixed Rope System	052 - Engineer (Individual)	Approved
052-247-1312	Access a Victim in a High Angle Environment	052 - Engineer (Individual)	Analysis
052-247-1303	Belay a Falling Load	052 - Engineer (Individual)	Approved
052-247-1304	Construct a Fixed Rope System	052 - Engineer (Individual)	Analysis
052-247-1311	Perform Litter Tender Duties for a High Angle Rescue	052 - Engineer (Individual)	Analysis
052-247-1309	Perform a Self Rescue from a Jammed Rack	052 - Engineer (Individual)	Approved
052-247-1215	Construct a Confined Space Retrieval System	052 - Engineer (Individual)	Analysis
052-247-1306	Construct a Compound Rope Mechanical Advantage System for Rope Rescues	052 - Engineer (Individual)	Approved
052-247-1201	Package a Victim for Removal From an Urban Search and Rescue Incident	052 - Engineer (Individual)	Approved
052-247-1207	Construct a Lowering System for Rope Rescues	052 - Engineer (Individual)	Approved
031-627-2153	Operate a Belay System	031 - CBRN (Individual)	Approved
031-627-2152	Conduct a System Safety Check	031 - CBRN (Individual)	Approved
052-247-1208	Perform Litter Tender Duties for a Low Angle Rescue	052 - Engineer (Individual)	Approved
031-627-2151	Construct a Belay System	031 - CBRN (Individual)	Approved
031-627-2148	Construct a Single Point Anchor System	031 - CBRN (Individual)	Approved
052-247-1302	Construct a Simple Rope Mechanical Advantage System for Rope Rescues	052 - Engineer (Individual)	Approved
052-247-1308	Rappel a Fixed Rope System	052 - Engineer (Individual)	Approved

Supported Individual Tasks :

Task Number	Title	Proponent	Status
052-247-1307	Ascend a Fixed Rope System	052 - Engineer (Individual)	Approved
052-247-1304	Construct a Fixed Rope System	052 - Engineer (Individual)	Analysis
052-247-1302	Construct a Simple Rope Mechanical Advantage System for Rope Rescues	052 - Engineer (Individual)	Approved
052-247-1310	Rescue a Conscious Victim from a Suspended Location	052 - Engineer (Individual)	Analysis
052-247-1308	Rappel a Fixed Rope System	052 - Engineer (Individual)	Approved
052-247-1330	Operate a Lowering System	052 - Engineer (Individual)	Approved
052-247-1331	Operate a Raising System	052 - Engineer (Individual)	Reviewed

052-247-1208	Perform Litter Tender Duties for a Low Angle Rescue	052 - Engineer (Individual)	Approved
052-247-1309	Perform a Self Rescue from a Jammed Rack	052 - Engineer (Individual)	Approved
052-247-1306	Construct a Compound Rope Mechanical Advantage System for Rope Rescues	052 - Engineer (Individual)	Approved
052-247-1215	Construct a Confined Space Retrieval System	052 - Engineer (Individual)	Analysis

Supported Collective Tasks : None