



Pioneering Merit Badge Workbook

SCOUTMASTER BUCKY

Scouts participating in a Scoutmaster Bucky merit badge opportunity, whether online or in person, should consider using the Pioneering merit badge pamphlet for discovery and knowledge, along with the class preparation pages for clarifications, insights, and expectations.

<https://scoutmasterbucky.com/merit-badges/pioneering/pioneering-pamphlet.pdf>

<https://scoutmasterbucky.com/merit-badges/pioneering/pioneering-cpp.pdf>

REQUIREMENT 1a: Explain to your counselor the most likely hazards you might encounter while participating in pioneering activities and what you should do to anticipate, help prevent, mitigate, and respond to these hazards.

HAZARD #1

Description:

Anticipate:

Help Prevent:

Mitigate:

Respond:



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HAZARD #2

Description:

Anticipate:

Help Prevent:

Mitigate:

Respond:



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HAZARD #3

Description:

Anticipate:

Help Prevent:

Mitigate:

Respond:



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HAZARD #4

Description:

Anticipate:

Help Prevent:

Mitigate:

Respond:



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HAZARD #5

Description:

Anticipate:

Help Prevent:

Mitigate:

Respond:



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HAZARD #6

Description:

Anticipate:

Help Prevent:

Mitigate:

Respond:



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REQUIREMENT 1b: Discuss the prevention of, and first-aid treatment for, injuries and conditions that could occur while working on pioneering projects, including rope splinters, rope burns, cuts, scratches, insect bites and stings, hypothermia, dehydration, heat exhaustion, heatstroke, sunburn, and falls.

ROPE SPLINTERS:

Prevention:

Treatment:

ROPE BURNS:

Prevention:

Treatment:

CUTS:

Prevention:

Treatment:



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SCRATCHES:

Prevention:

Treatment:

INSECT BITES AND STINGS:

Prevention:

Treatment:

HYPOTHERMIA:

Prevention:

Treatment:



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DEHYDRATION:

Prevention:

Treatment:

HEAT EXHAUSTION:

Prevention:

Treatment:

HEATSTROKE:

Prevention:

Treatment:



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SUNBURN:

Prevention:

Treatment:

FALLS:

Prevention:

Treatment:

REQUIREMENTS 2 and 3 ARE SKILL-BASED REQUIREMENTS. SCOUTS WILL NEED TO SHOW BY DOING THE SPECIFIED TASKS OVERSEEN AND REVIEWED BY A PIONEERING MERIT BADGE COUNSELOR.

SCOUTS NOT ABLE TO PHYSICALLY PERFORM THESE SKILLS WILL FIND IT DIFFICULT TO COMPLETE.

Only Scouts that are mentally and physically able to perform the tasks will be considered for sign-off. Some instructors / counselors may be able to provide some coaching, but there is no guarantee that the required skills to successfully accomplish these requirements can be developed enough for success.

This requirement must be reviewed with your merit badge counselor.

BE PREPARED!



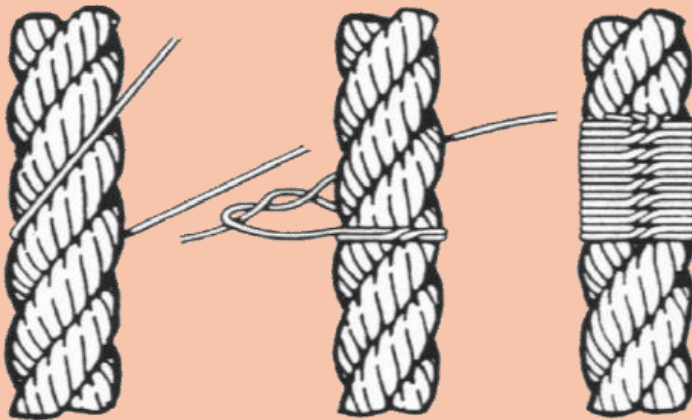
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REQUIREMENT 2a: Demonstrate the West Country method of whipping a rope.

This requirement must be reviewed with your merit badge counselor.

BE PREPARED!



A group of countries west of Bristol, England, which has long been a seafaring area, is referred to as West Country.

To make a West Country Whipping on a 1/4-inch diameter rope, start with a 14-inch length waxed flax cord. Wrap the cord around the end of the rope about 1/2 to 3/4 of an inch from the end, and tie a half knot (like you're starting to tie a square knot). If the rope is badly frayed, it can be pulled together with a clove hitch or constrictor knot to begin the whipping.

Continue by taking the two ends of the whipping cord around the back of the rope (away from you), and tie another half knot. Keep repeating half knots, front and back until the whipping has been formed. A good rule of thumb to follow when making this kind of whipping is to make the whipping as long as the diameter of the rope.

Always tie each half knot right over left of left over right so that the knots lay neatly together and snug against the previous knot to form a smooth finished whipping. The West Country Whipping is finished with a square knot, and the excess cord is trimmed.

REQUIREMENT 2b: Demonstrate how to tie a rope tackle.

This requirement must be reviewed with your merit badge counselor.

BE PREPARED!

A rope tackle, (also known as the Trucker's Hitch, Lineman's Hitch, Load Binder, and Harvester Hitch) can be applied where the guylines meet the anchors for most pioneering projects. For safety reasons, Taut-Line Hitches should never be used in any pioneering work, because if the tension is eased the knot can slip.

The rope tackle is one of the many skills learned for pioneering that can be used in a variety of situations for years to come. Frequently, it's used when creating a ridge line between two trees for dining flies and tarps, and used whenever there's an appropriate need to hold the strain on a line being tightened. When you want to lift or pull more than your own strength will permit, or when you want to make a heavy lifting job a little easier, the rope tackle is a device that can be used.



The idea behind a rope tackle is similar to that of a tackle using blocks and pulleys. In a rope tackle, one lead (end) of the rope has to be fixed. That is, it has to be anchored around a spar or tied through a ring or other piece of hardware that doesn't move.

Loop knot. Then a loop knot is tied along the standing part of the rope. The **butterfly knot** is most suitable for making a loop knot because it can be tied in the standing part of the rope and is both easy to tie and fairly easy to untie even after being put under a strain. If you have no other reason to become proficient in tying this knot, the rope tackle should convince you.

Connect with the load. After you've tied the loop knot, it forms a fixed loop that acts as the wheel in a block. If you're using the rope tackle to lift or pull an object, pass the running end through a ring or other hardware that's attached to the object (load). The ring (or other hardware) is used so that the rope is free to slide as you pull on the hauling end of the rope as the tackle takes effect. If you want to use the rope tackle to tighten a line, pass the running end around a fixed object such as a spar, a stake, or a tree.

Finally, the running end of the rope is passed through the fixed loop in the loop knot. The running end becomes the hauling line which is pulled to make the tackle work.



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Principles. The rope tackle works on the same principles as any other tackle using mechanical blocks or pulleys. The rigging method shown on the left develops twice the lifting or pulling power that's applied to the hauling end. In other words, you can lift a fifty-pound weight using only twenty-five pounds of force on the hauling end.

To determine how much force is needed to lift a weight, the general rule is that you count the number of ropes passing through the ring where the object (load) is. In this case there are two ropes passing through the ring that's attached to the load. Then divide the number into the weight being lifted. Let's assume that the weight being lifted is fifty pounds. The answer is twenty-five pounds, which is the amount of pull required to lift the fifty pounds with the rope tackle.

When you take into consideration the friction of the ropes rubbing together, you will have to apply a bit more than the twenty-five pounds to make the lift. But even with the loss caused by friction, the rope tackle is quite effective.

Sometimes it is better to actually experience the effect of how the rope tackle works than it is to understand the technical explanation of the process. Setting up a rope tackle will convince you.

Tying off. When using a rope tackle, if you want to hold the position of a load being lifted or pulled, or if you want to hold the strain of a line being tightened, form a bight in the hauling end of the rope and tie it off with a tight Half Hitch below the fixed loop in the Butterfly Knot.

Types of rope. The type of rope you choose for a rope tackle should have a low stretch factor, such as pure manila rope. Ropes that stretch like polypropylene and nylon, even though they are strong, require that you pull the stretch out of the rope before your tackle takes effect.

Note: When in use, the rope tackle can put considerable strain on the fibers of the rope. Therefore, repeated use of the same section of the rope for this purpose should be avoided. The ropes used to make the tackle should be inspected for damaged fibers on a regular basis.

Uses of the rope tackle. The wide range of uses for a rope tackle by a number of different craftsmen speaks for its effectiveness. Each craft seems to use a slightly different knot or hitch to form the loop that makes a rope tackle. The Lorryman's Hitch, the Lineman's Hitch, the Stagehand's Hitch, are all samples of different knots or hitches used to form the loop. The only difference between these hitches is that in some of them the type of knot used to make the loop is more easily untied than others after a hard pull. But they all do essentially the same thing. That is, they form a fixed loop for the rope to be used as a tackle.

The extent to which the rope tackle has been used by craftsmen and tradesmen in their daily work can be better understood from the following list of uses and by the various names by which it is called:

- The Linesman's Hitch is used to put strain on a line in the process of stringing electric or telephone lines. It was used as far back as the building of the telegraph lines that opened up the western states during the 1800s.
- The Stagehand's Hitch is used to adjust the height of the curtains on a theater stage.
- The Wagoner's Hitch is an English reference to the hitch used to secure the load on a wagon or lorry.
- The Load Binder is what the farmer called the hitch he used to tie down a load of hay on his wagon.

Pulling a log. One of the uses of a rope tackle is to pull a heavy load such as a log. To do this, you need two ropes. Tie a short (6 to 8-foot) length of rope to the end of the log with a timber hitch. Then tie a bowline at the other end of this rope.

To pull the log, tie a long line to a tree or other anchor point using a roundturn with two half hitches. Then tie a butterfly knot in the long line to form the loop for a rope tackle. Run the end of the long line through the bowline and back through the fixed loop in the butterfly knot. Then pull on the end of the long line to pull the log.

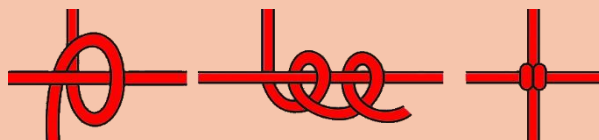


REQUIREMENT 2b: Demonstrate how to tie a clove hitch formed as two half hitches.

This requirement must be reviewed with your merit badge counselor.

BE PREPARED!

CLOVE HITCH FORMED WITH TWO HALF HITCHES



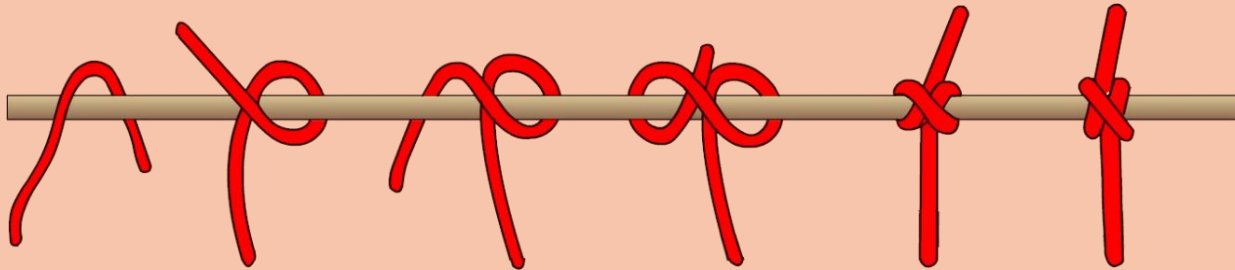


REQUIREMENT 2b: Demonstrate how to tie a clove hitch on a bight.

This requirement must be reviewed with your merit badge counselor.

BE PREPARED!

CLOVE HITCH ON A BIGHT

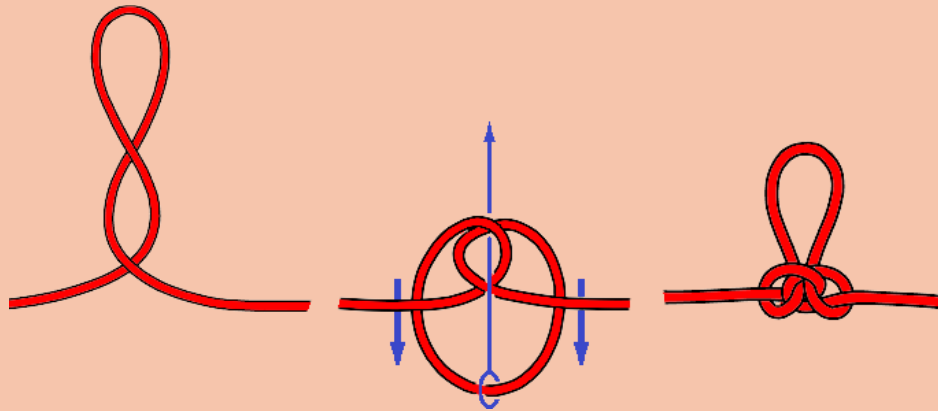


REQUIREMENT 2b: Demonstrate how to tie a butterfly knot.

This requirement must be reviewed with your merit badge counselor.

BE PREPARED!

BUTTERFLY KNOT

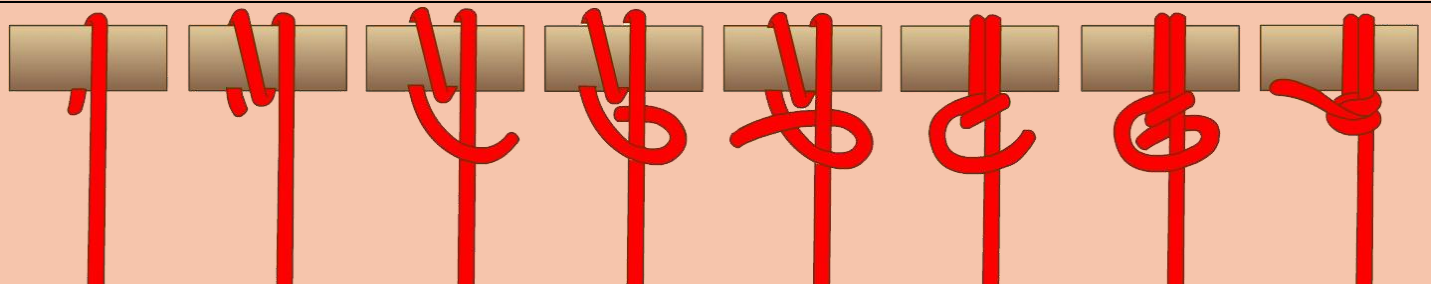


REQUIREMENT 2b: Demonstrate how to tie a roundturn with two half hitches

This requirement must be reviewed with your merit badge counselor.

BE PREPARED!

ROUNDTURN WITH TWO HALF HITCHES



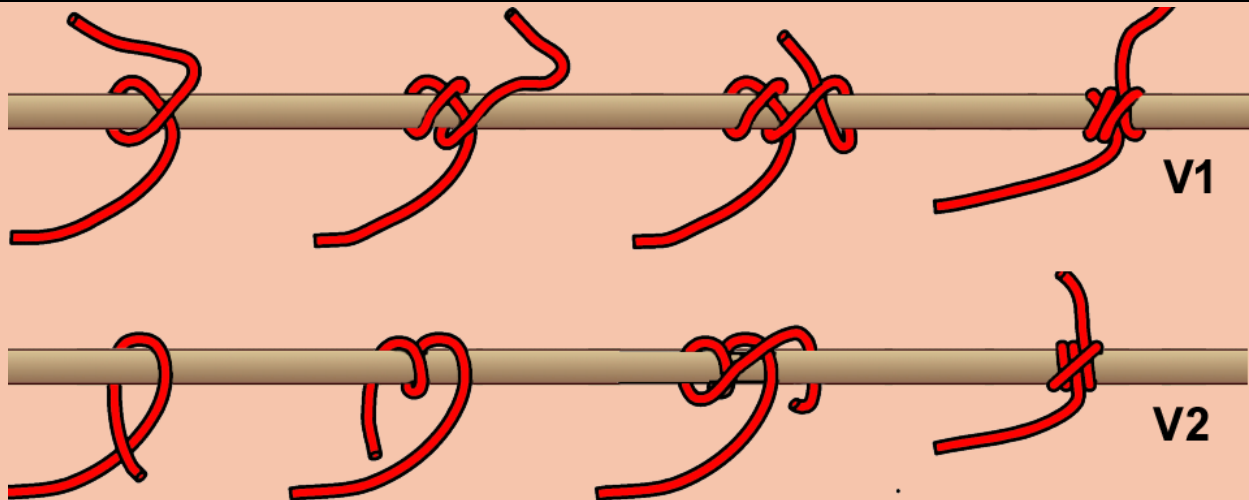


REQUIREMENT 2b: Demonstrate how to tie a rolling hitch.

This requirement must be reviewed with your merit badge counselor.

BE PREPARED!

ROLLING HITCH

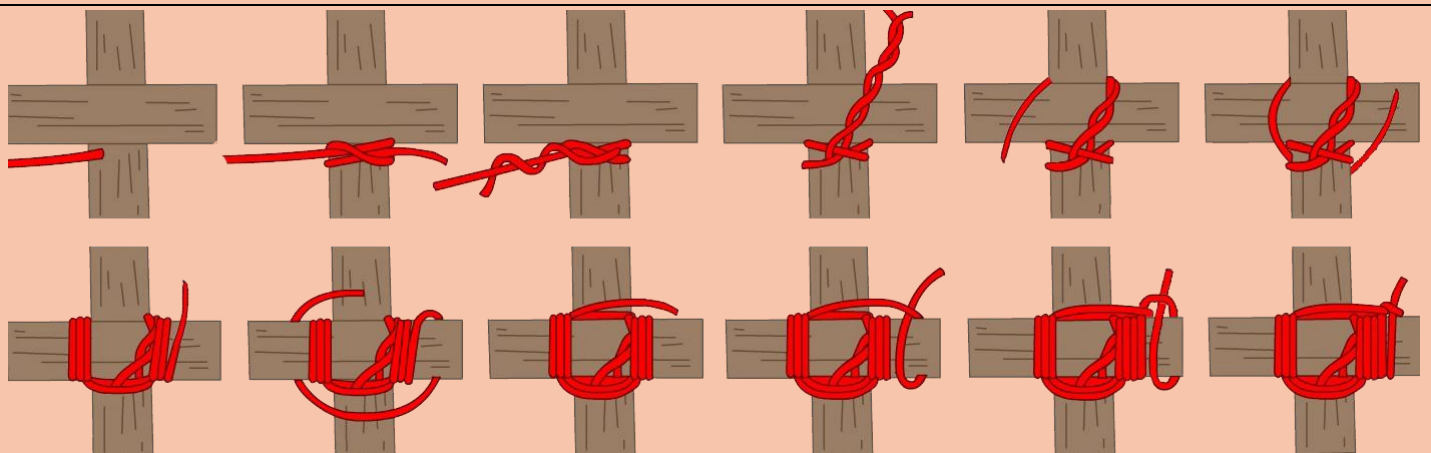


REQUIREMENT 2c: Demonstrate and explain when to use the square lashing.

This requirement must be reviewed with your merit badge counselor.

BE PREPARED!

SQUARE LASHING



When to use:

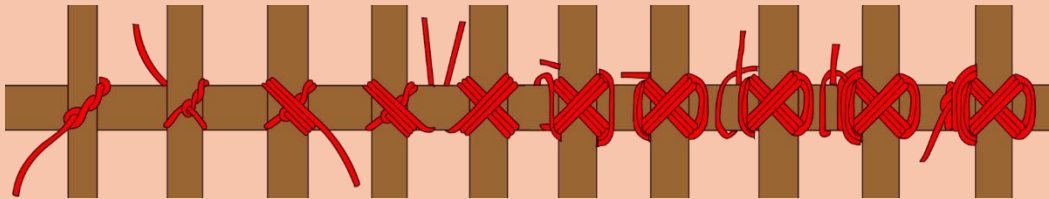


REQUIREMENT 2c: Demonstrate and explain when to use the diagonal lashing.

This requirement must be reviewed with your merit badge counselor.

BE PREPARED!

DIAGONAL LASHING



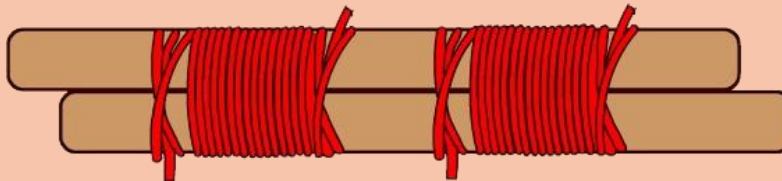
When to use:

REQUIREMENT 2c: Demonstrate and explain when to use the round lashing.

This requirement must be reviewed with your merit badge counselor.

BE PREPARED!

ROUND LASHING



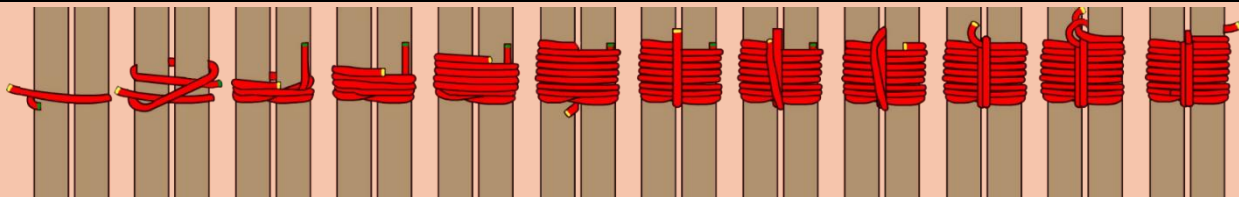
When to use:

REQUIREMENT 2c: Demonstrate and explain when to use the shear lashing.

This requirement must be reviewed with your merit badge counselor.

BE PREPARED!

SHEAR LASHING



When to use:

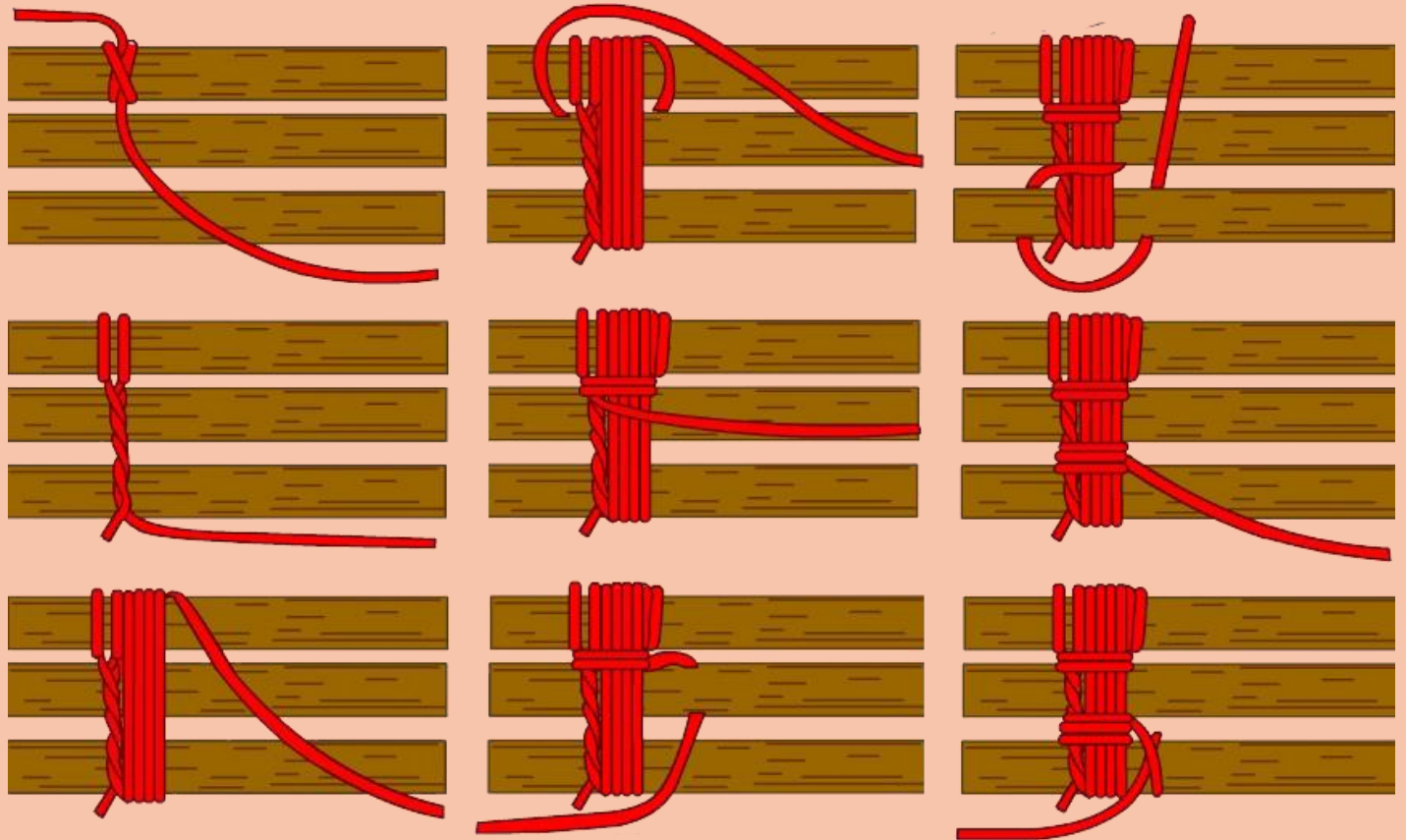


REQUIREMENT 2c: Demonstrate and explain when to use the tripod lashing.

This requirement must be reviewed with your merit badge counselor.

BE PREPARED!

TRIPOD LASHING



When to use:

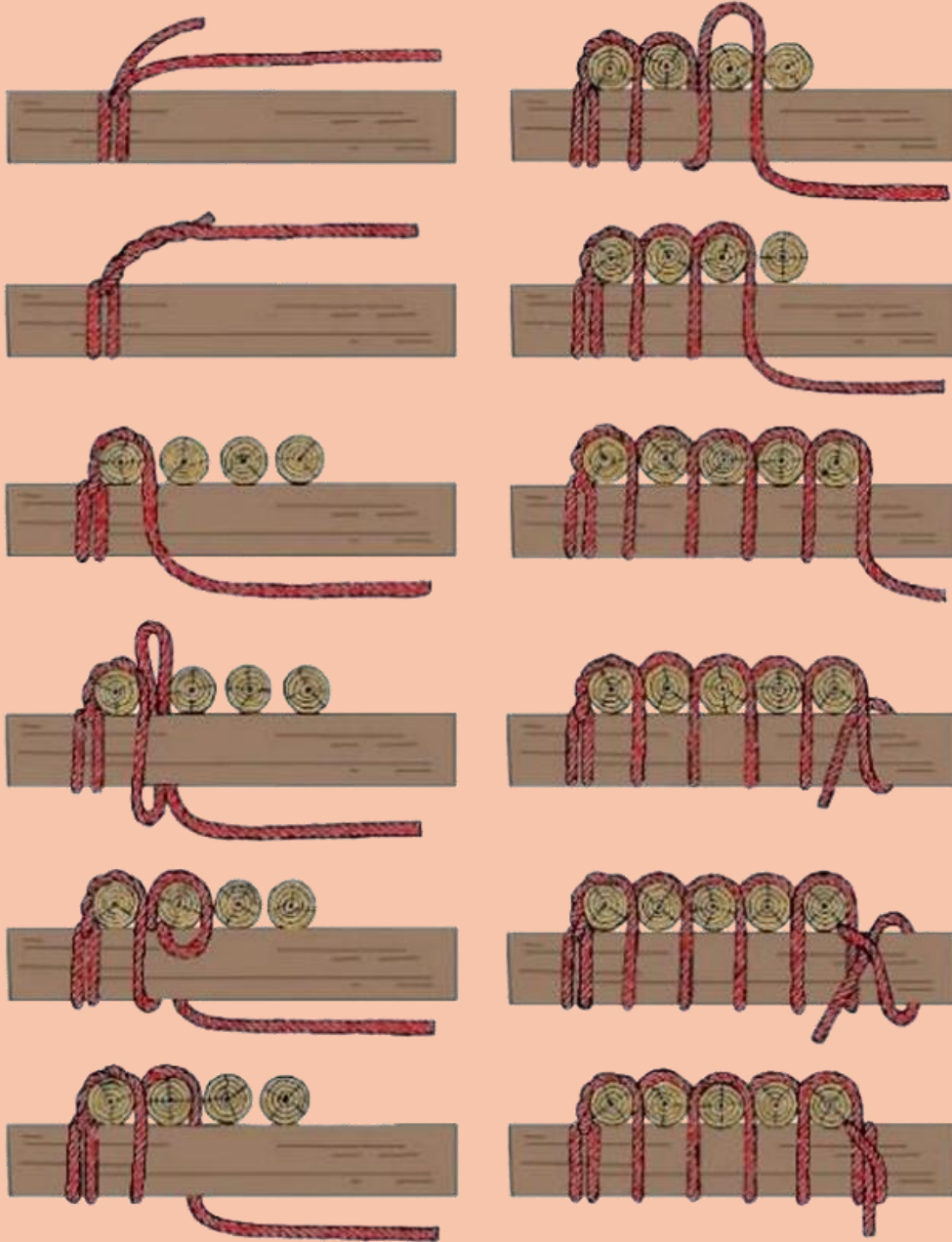


REQUIREMENT 2c: Demonstrate and explain when to use the floor lashing.

This requirement must be reviewed with your merit badge counselor.

BE PREPARED!

FLOOR LASHING



When to use:



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REQUIREMENT 3a:	Using square and tripod lashings from requirement 2(c), build a Tripod Wash Station (or with your counselor's permission, another camp gadget of your own design).
REQUIREMENT 3b:	Using rolling hitches or roundturns with two half hitches, and round lashings from requirements 2(b) and 2(c), build a 15-foot Scout Stave Flagpole (or with your counselor's permission, another camp gadget of your own design).
REQUIREMENT 3c:	Using shear, square, and floor lashings, clove hitches on a bight, and rope tackles from requirements 2(b) and 2(c), build a Simple Camp Table (or with your counselor's permission, another camp gadget of your own design).

Consider using the [Pioneering Merit Badge Pamphlet](#) for preparation information

Requirement 3 must be reviewed with your merit badge counselor.

BE PREPARED!

REQUIREMENT 4:	Explain the differences between synthetic ropes and natural-fiber ropes.
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Notes:



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REQUIREMENT 4: Discuss which types of rope are suitable for pioneering work and why.

Notes:

REQUIREMENT 4: Discuss rope breaking strength.

Notes:

REQUIREMENT 4: Discuss rope safe working loads.

Notes:

REQUIREMENT 4: Discuss the care and storage of rope.

Notes:



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REQUIREMENT 5: Explain the uses for the back splice. View a demonstration on forming this splice.

BACK SPLICE:

☐ VIEWED DEMONSTRATION



Use for Back Splice:

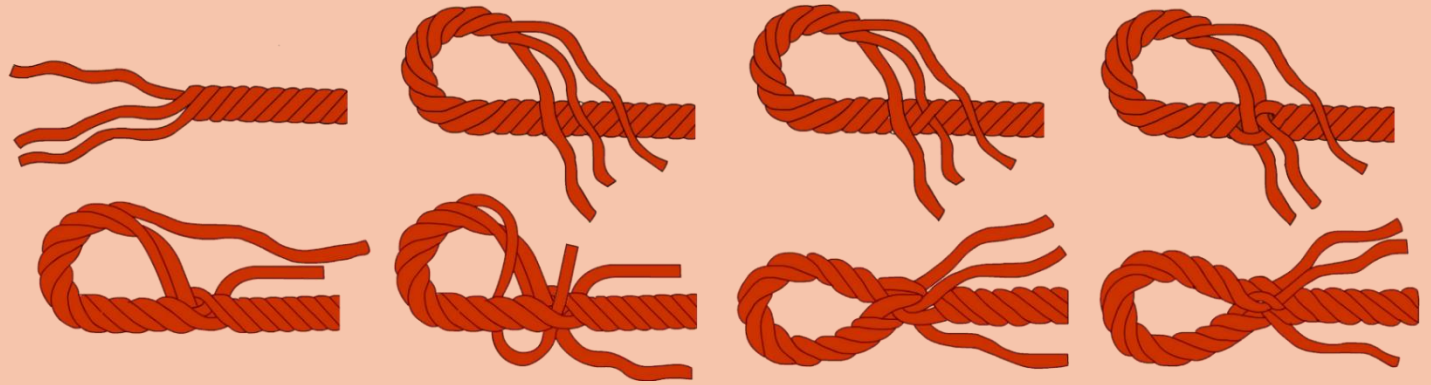


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REQUIREMENT 5: Explain the uses for the eye splice. View a demonstration on forming this splice.

EYE SPLICE:

☐ VIEWED DEMONSTRATION



Use for Eye Splice:



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REQUIREMENT 5: Explain the uses for the short splice. View a demonstration on forming this splice.

SHORT SPLICE:

☐ VIEWED DEMONSTRATION



Use for Short Splice:



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REQUIREMENT 6: Using a rope-making device or machine, make a rope at least 6 feet long consisting of three strands, each having three yarns. Whip the ends.

Consider using the [Pioneering Merit Badge Pamphlet](#) for preparation information

This requirement must be reviewed with your merit badge counselor.

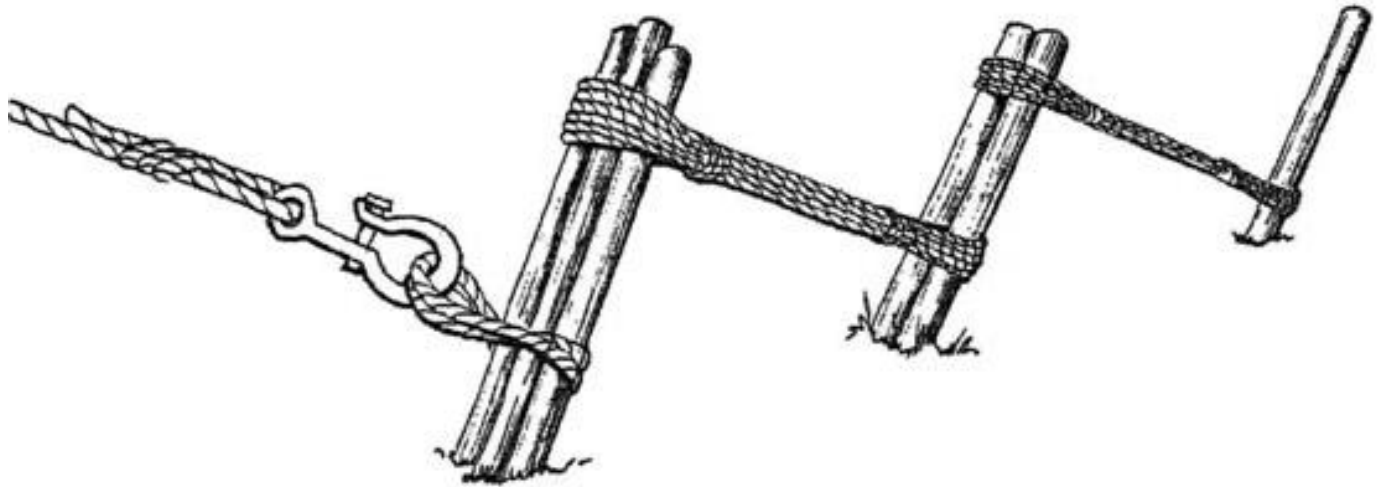
BE PREPARED!

REQUIREMENT 7: Explain the importance of effectively anchoring a pioneering project.

Notes:



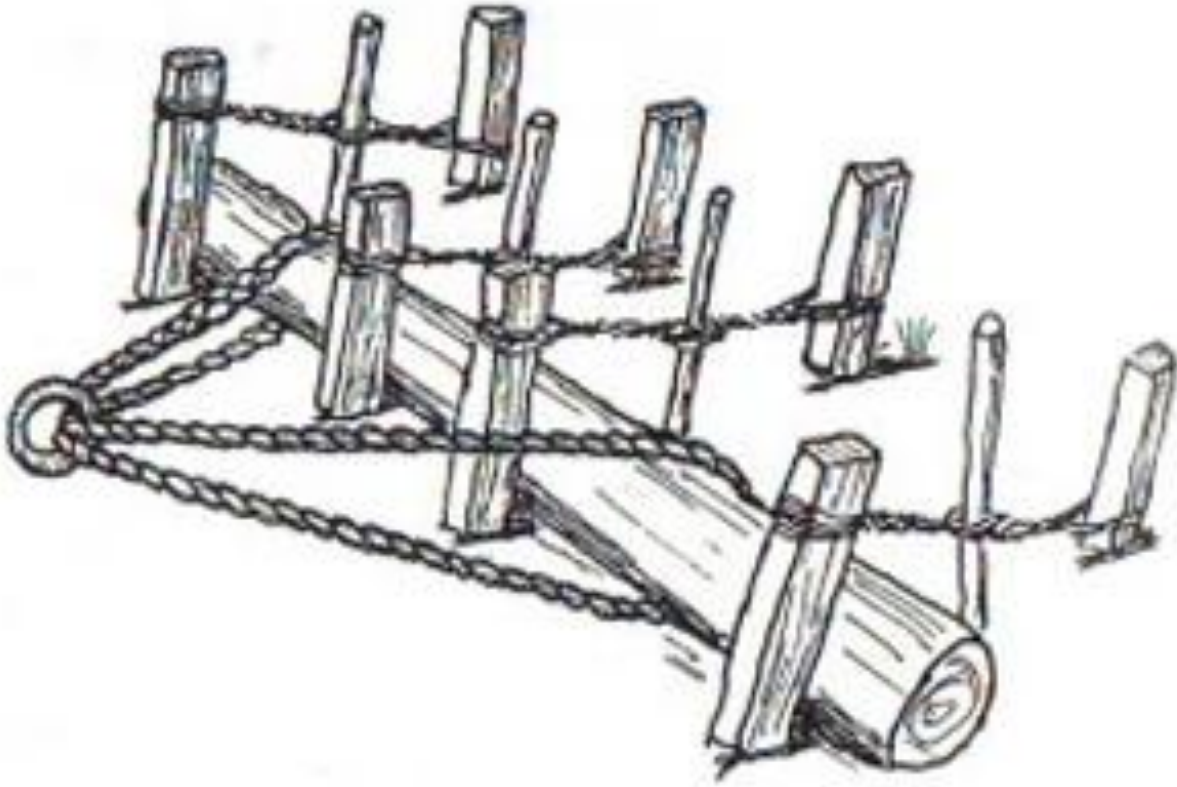
REQUIREMENT 7: Describe to your counselor the 3-2-1 anchoring system.



Notes:



REQUIREMENT 7: Describe to your counselor the log-and-stake anchoring system.

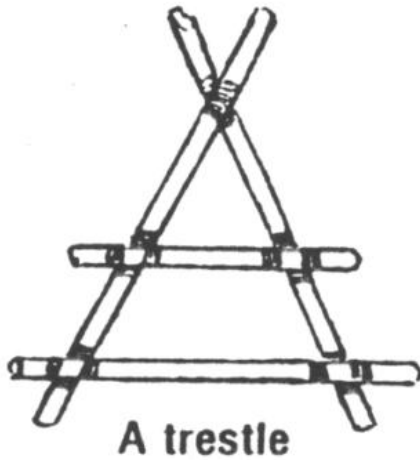


Notes:

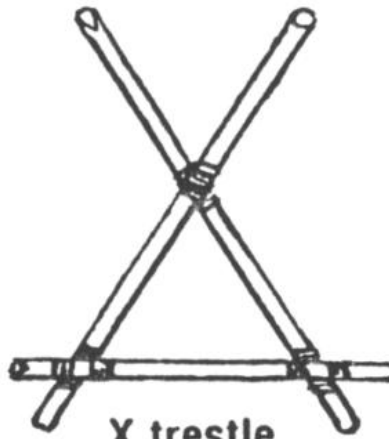


REQUIREMENT 8:

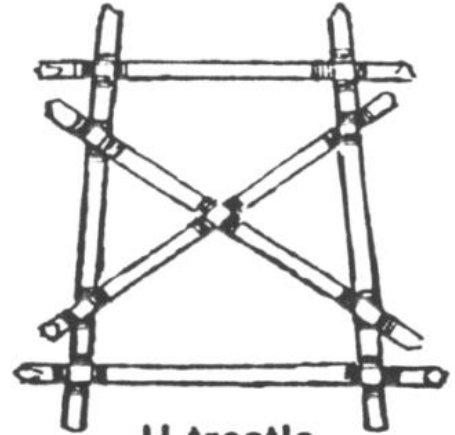
Describe the lashings that are used when building a trestle, how the poles are positioned, and how X braces contribute to the overall structural integrity of a pioneering project.



A trestle



X trestle



H trestle

Notes:

REQUIREMENT 9:

Working in a group, (or individually with the help of your counselor) build a full size pioneering structure, using one of the following designs in the [Pioneering Merit Badge Pamphlet](#):

- Double A-Frame Monkey Bridge
- Single A-Frame Bridge
- Single Trestle Bridge
- Single Lock Bridge
- 4x4 Square Climbing Tower
- Four Flag Gateway Tower
- Double Tripod Chippewa Kitchen
- Another type of structure approved in advance by your counselor

Carefully plan the project, assembling and organizing all the materials, referring to the points under Safe Pioneering, and complying with the height restrictions in the Guide to Safe Scouting.