



Core



Module 00109

Introduction to Material Handling

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Core 00109 Introduction to Material Handling



1.0.0 Material Handling

Objective

Successful completion of this module prepares you to do the following:

Identify the basic concepts of material handling and common safety precautions.

- a. Describe the basic concepts of material handling and manual lifting.
- b. Identify common material handling safety precautions.
- c. Identify and describe how to tie knots commonly used in material handling.

Performance Tasks

Under supervision, you should be able to do the following:

1. Demonstrate safe manual lifting techniques.
2. Demonstrate how to tie two of the following common knots:
 - Square
 - Bowline
 - Half hitch
 - Clove hitch

Trade Terms (1 of 2)

Square knot: A knot made of two reverse half-knots and typically used to join the ends of two ropes of similar diameters; also called a reef knot.

Bowline: A knot used to form a loop that neither slips nor jams; sometimes referred to as a rescue knot or the king of knots.

Half hitch: A knot tied by passing the working end of a rope around an object, across the standing part of the rope, and then through the resulting loop; often used as an element in forming other knots or added to make other knots more secure.

Trade Terms (2 of 2)

Clove hitch: A knot that consists of two half hitches made in opposite directions; used to temporarily secure a rope to an object.

Standing end: The end of a rope that is not being knotted.

Working end: The end of a rope that is being used to tie a knot.

Standing part: The portion of a rope that is between the standing end and the working end.

Capsize: To change the form and rearrange the parts of a knot, usually by pulling on specific ends of the knot.

1.1.0 – Material Handling Basics

To prevent injuries when handling materials:

- Pre-plan the task.
- Wear appropriate PPE.
- Follow proper lifting procedures.
- Be aware of hazards posed by heights and suspended loads.

1.1.1–1.1.2 – Pre-Task Planning and Personal Protective Equipment

Basic Guidelines

- Assess the situation before attempting a lift.
- Wear the proper clothing.
- Use the appropriate PPE.
- Follow established policies.

1.1.3 – Proper Lifting and Lowering Procedures (1 of 2)

Safe Lifting Technique



1.1.3 – Proper Lifting and Lowering Procedures (2 of 2)

Guidelines for Lowering a Load

- Size up the load first.
- Lower the load in the same way it would be lifted.
- Treat the area that the load is being lowered into as a fall zone.

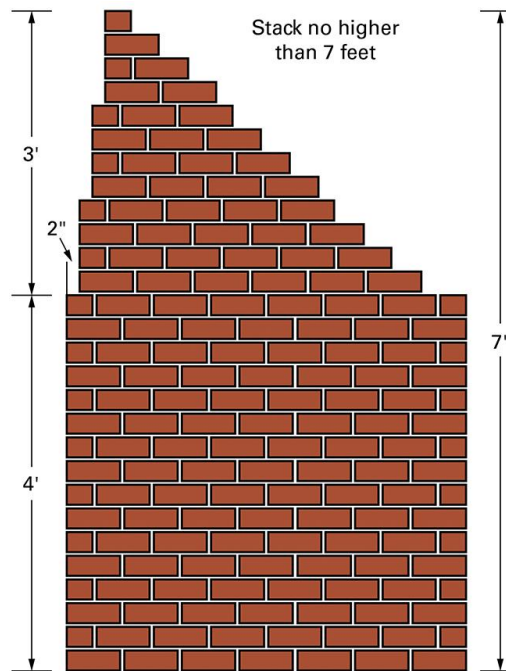
1.2.1 – Stacking and Storing Materials (1 of 3)

Follow safety guidelines for stacking and storing items such as:

- Cartons
- Lumber
- Pipes
- Items that should be chocked
- Items that should be tied down or banded
- Bags
- Bricks
- Masonry blocks
- Flammable materials
- Always properly store materials and equipment when they are not in current use

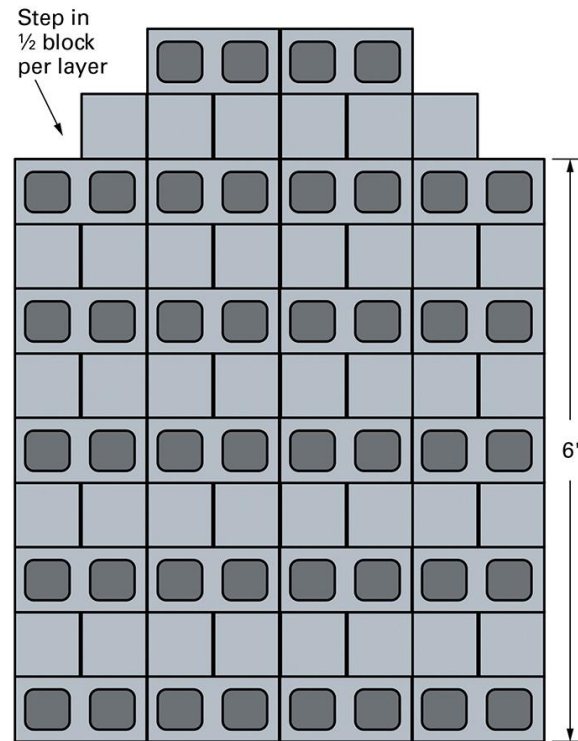
1.2.1 – Stacking and Storing Materials (2 of 3)

Stack loose bricks no higher than seven feet (2.1 m). Above four feet (1.2 m), begin stacking two inches (5 cm) in from the edge, continuing in this manner for each additional foot of height up to seven feet (2.1 m).



1.2.1 – Stacking and Storing Materials (3 of 3)

A stack of masonry blocks is set back one-half block per layer above six feet (1.8 m).



1.2.2 – Working from Heights

Safety Guidelines

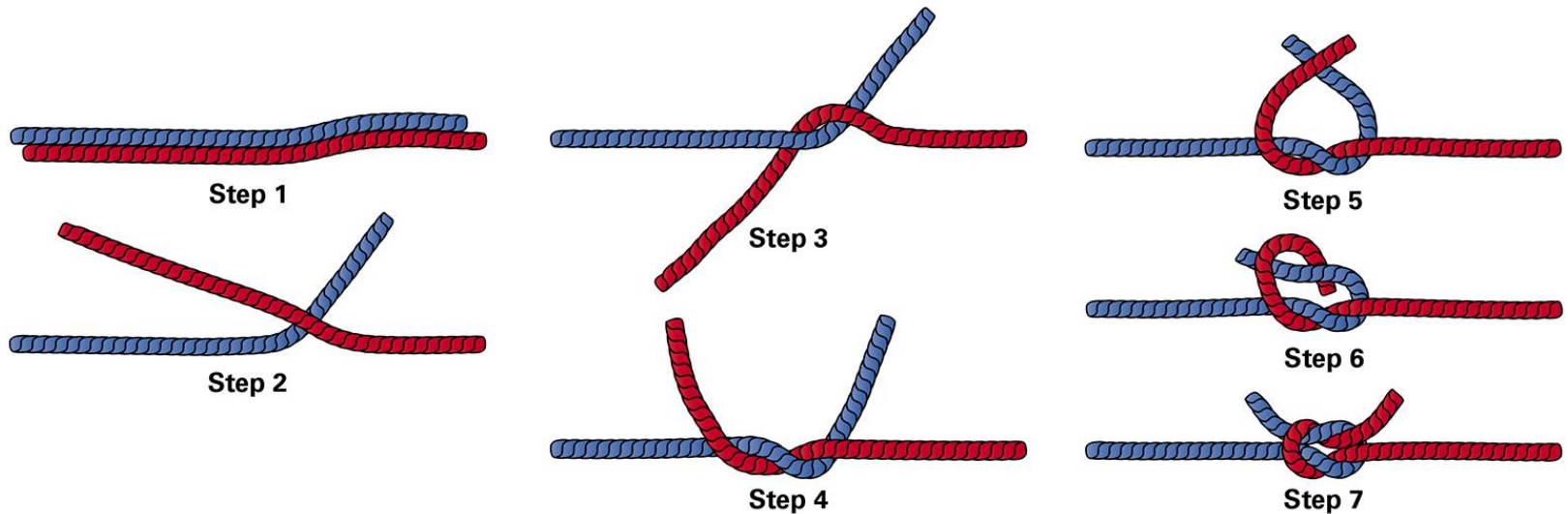
- Use a safety harness with a fall-arrest lanyard at heights over 6 feet (2 m).
- Use a rope to raise or lower tools and materials.
- Tie off tools and materials to keep them secured in elevated work areas.
- Follow precautions to use ladders safely.
- Never stack or store materials on scaffolds or runways.

1.3.0 – Knots for Material Handling

Knots and Hitches

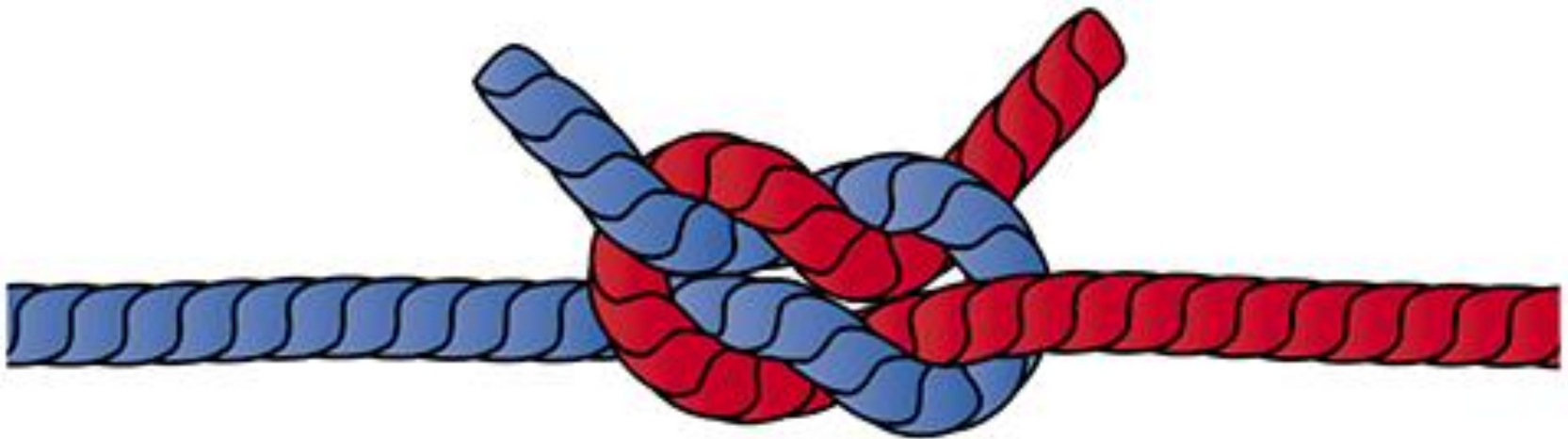
- True knots must be unwoven to be unfastened.
- Hitches can be undone by pulling in the reverse direction from that in which the knots are meant to hold.
- Key knot-tying terms are: standing end, working end, standing part, and capsize.

1.3.1 – The Square Knot (1 of 2)



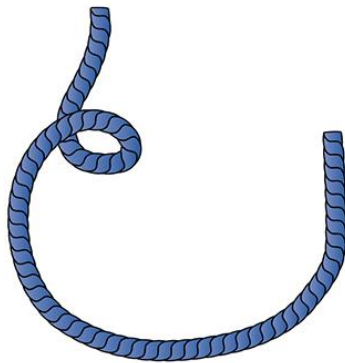
1.3.1 – The Square Knot (2 of 2)

The granny knot is the result if the second half knot is tied in the wrong direction when tying a square knot. It is a highly insecure knot!

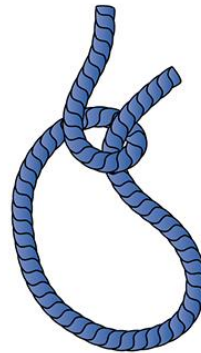


1.3.2 – The Bowline

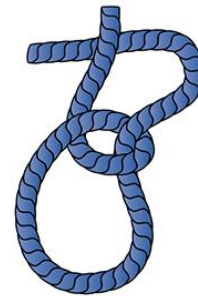
Do not use this knot if the rope may have to be released while under load!



Step 1



Step 2



Step 3



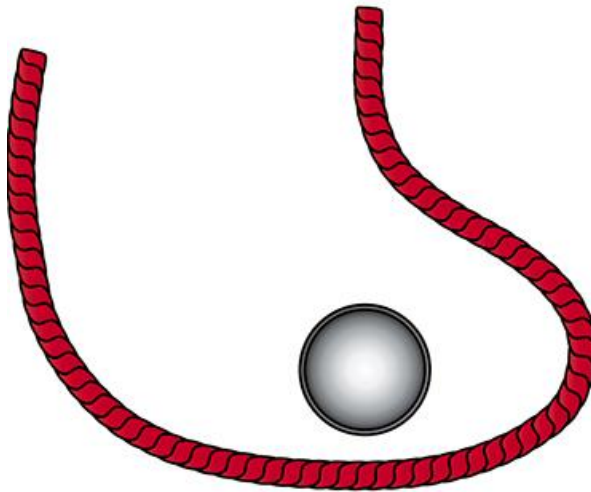
Step 4



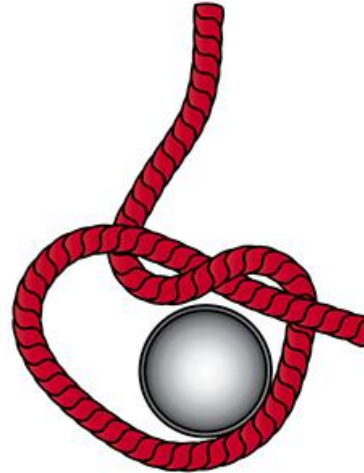
Step 5

1.3.3 – The Half Hitch

Do not use this knot alone for heavy loads or when safety is critical!



Step 1



Step 2

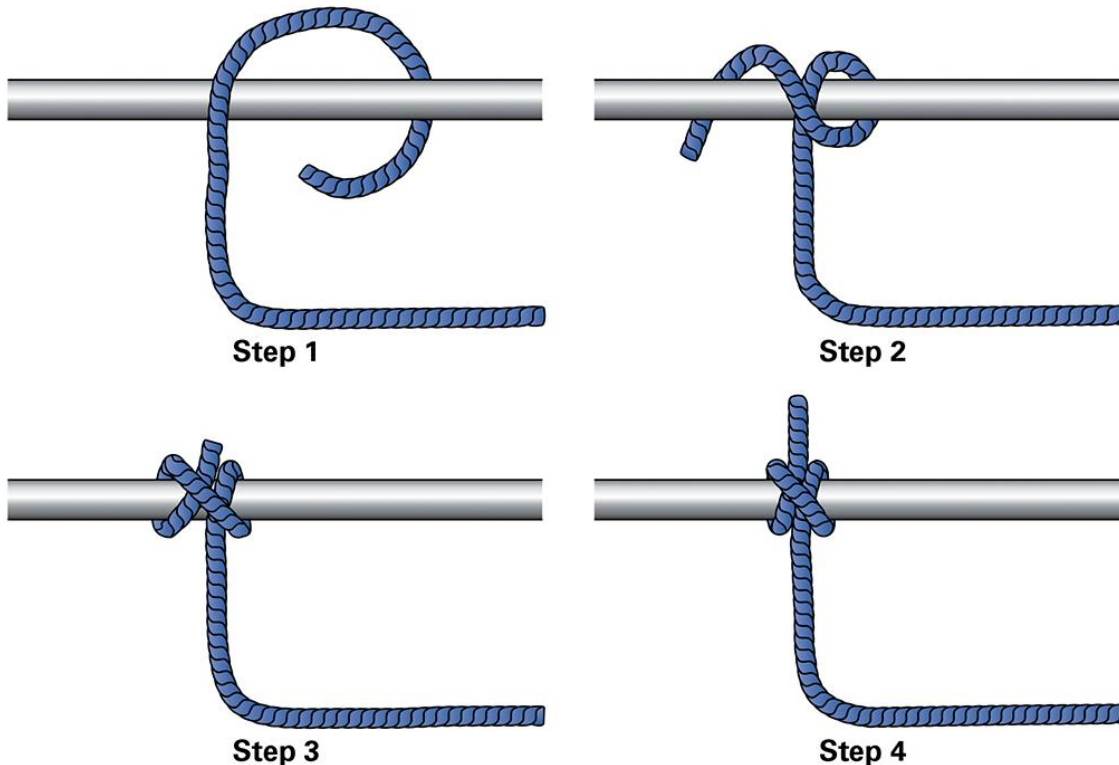


Step 3

1.3.4 – The Clove Hitch (1 of 3)

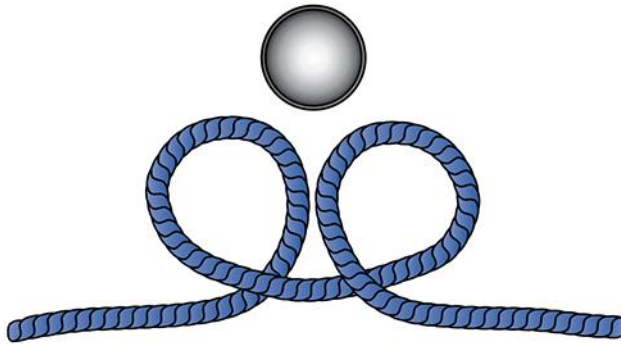
Do not use this knot alone; use additional half hitches to make it more secure.

Threading the End Technique

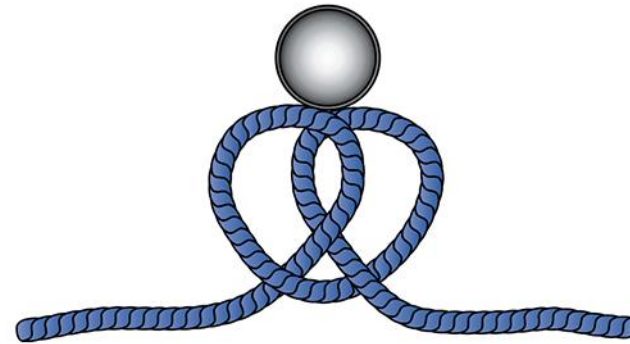


1.3.4 – The Clove Hitch (2 of 3)

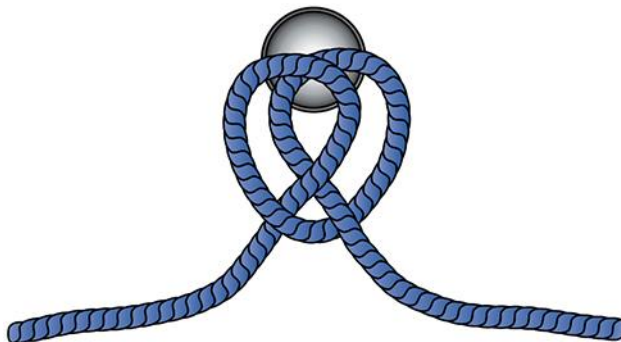
Stacked Loops Technique



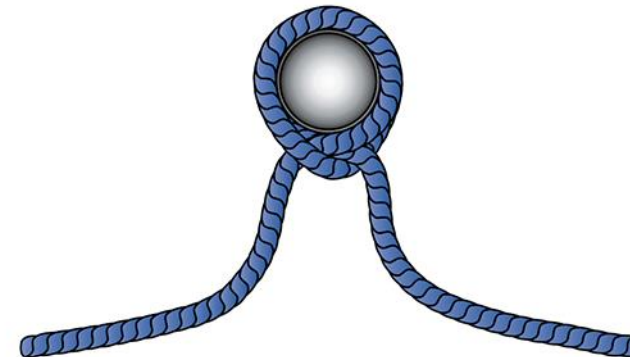
Step 1



Step 2



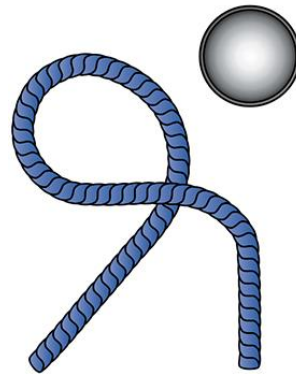
Step 3



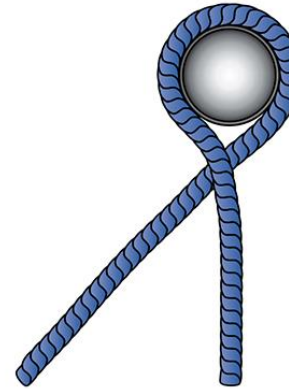
Step 4

1.3.4 – The Clove Hitch (3 of 3)

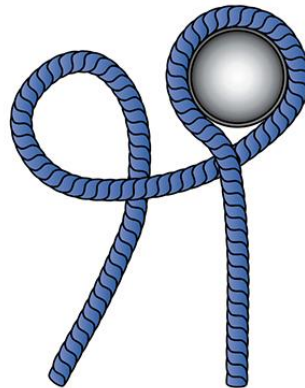
Two Half Hitches Technique



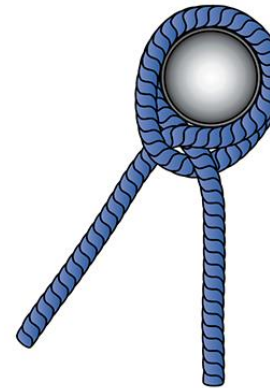
Step 1



Step 2



Step 3



Step 4



Next Section...

2.0.0 Material Handling Equipment

Read Sections 2.0.0 through 2.2.6. Complete the Section 2.0.0 Section Review.