

# Continuing Education For the Fire Fighter



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# ***Ropes, Webbing, and Knots***

## ***Module 2***

### ***Chapter 8***



# LEARNING OBJECTIVES

**Describe parts of a rope and considerations in tying a knot.**

**Describe characteristics of knots commonly used in the fire service.**

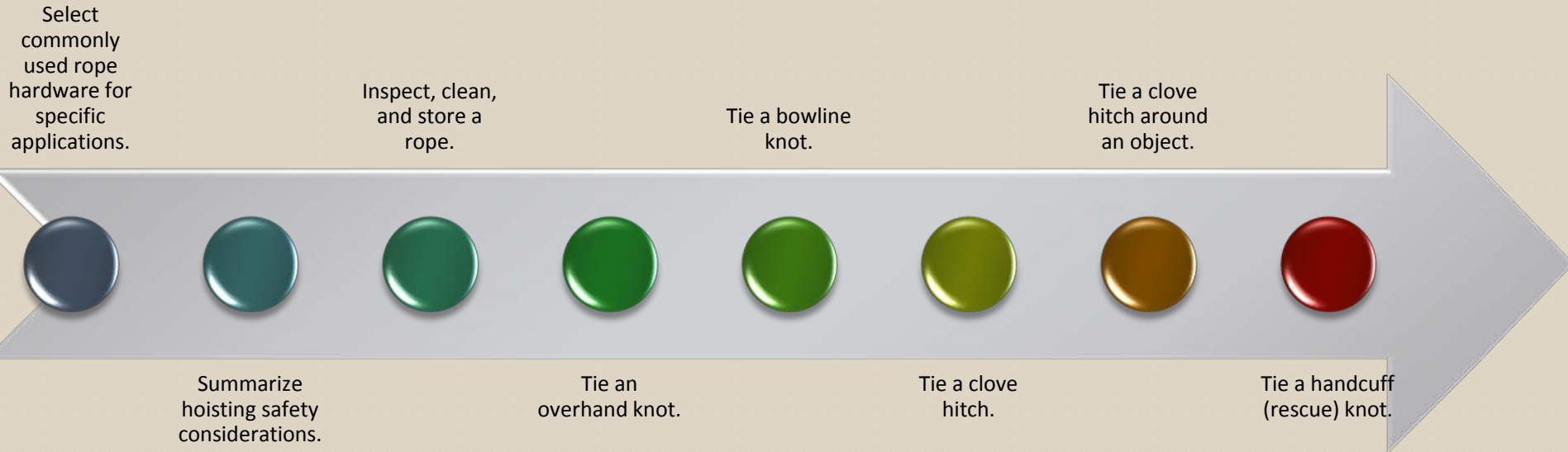
**Describe knot characteristics and knot elements.**



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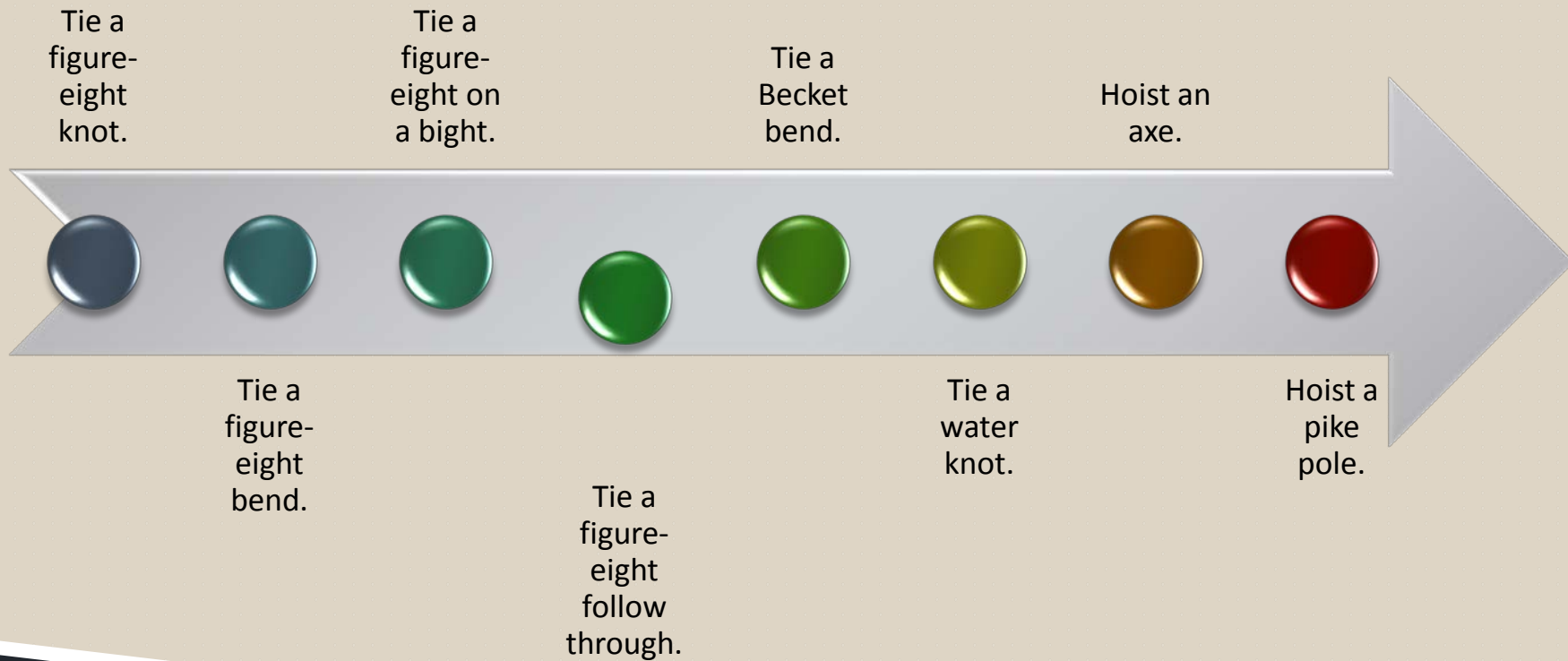


# LEARNING OBJECTIVES



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# LEARNING OBJECTIVES



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# LEARNING OBJECTIVES

**Hoist a  
roof  
ladder.**

**Hoist a  
charged  
hoseline.**

**Hoist a  
dry  
hoseline.**

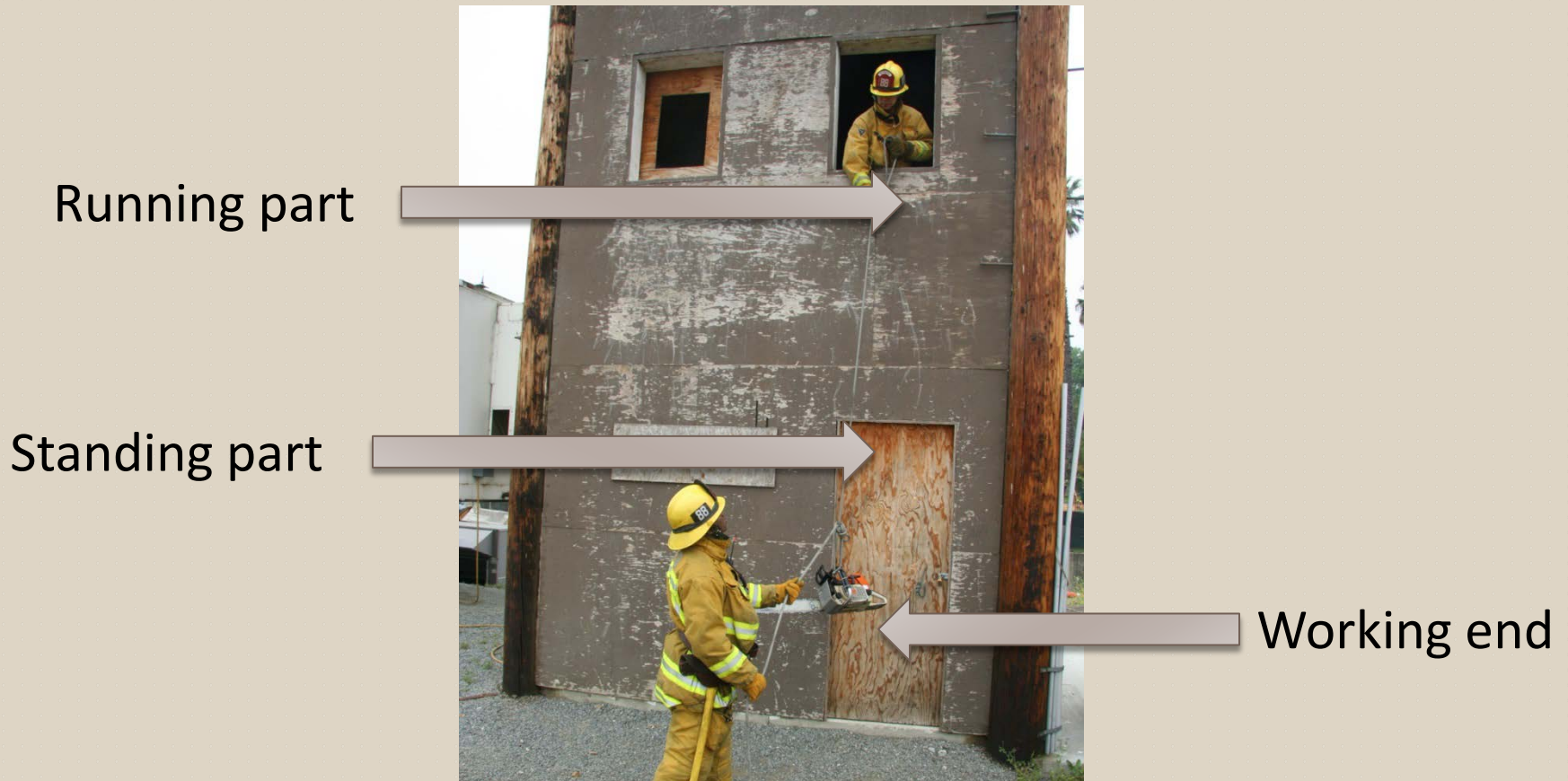
**Hoist a  
power  
saw.**



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# KNOTS PLAY A CRITICAL PART IN FIRE FIGHTING AND ARE MADE UP OF THREE PARTS.



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TIGHTEN ALL KNOTS, REMOVE ALL SLACK AFTER TYING (DRESSING), AND USE SAFETY KNOTS TO ENSURE SAFETY.



Overhand safety knot

*Courtesy of Shad Cooper/Wyoming  
State Fire Marshal's Office*



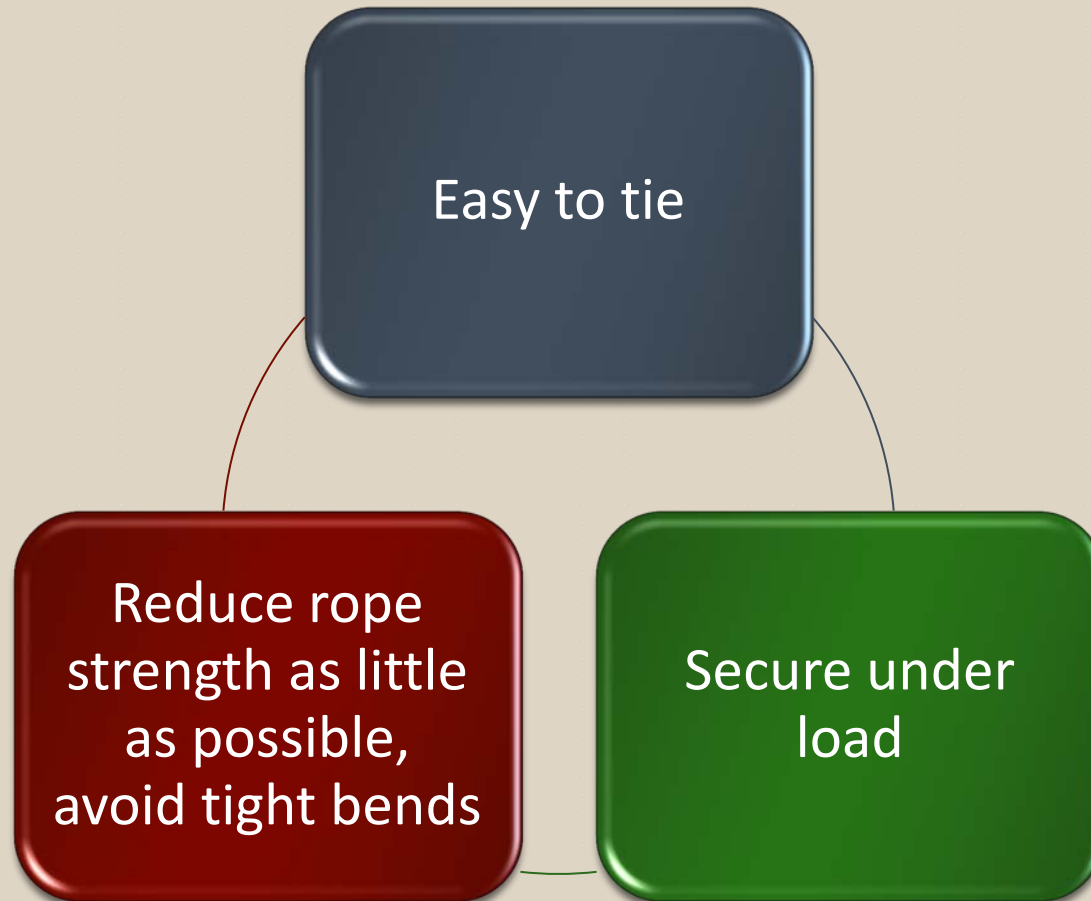
Clove hitch



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# ALL KNOTS TIED BY FIREFIGHTERS FOLLOW THESE BASIC PRINCIPLES.



# THREE BENDS ARE CREATED WHEN TYING A KNOT OR HITCH.



Bight



Loop



Round turn



# FIREFIGHTERS USE SEVERAL TYPES OF KNOTS FOR A VARIETY OF REASONS.



Overhand safety knot

- Used as a safety measure

Courtesy of Shad Cooper/Wyoming  
State Fire Marshal's Office



Bowline

- Easily tied and untied



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# FIREFIGHTERS USE SEVERAL TYPES OF KNOTS FOR A VARIETY OF REASONS.



Half-hitch

- Used to stabilize long objects while hoisting, combined with other knots



Clove hitch

- Attach rope to object, not used in life safety





# FIREFIGHTERS USE SEVERAL TYPES OF KNOTS FOR A VARIETY OF REASONS.



Handcuff (Rescue)

- Used to secure victim's hands, feet



Figure-Eight

- Can be used as stopper knot



# FIREFIGHTERS USE SEVERAL TYPES OF KNOTS FOR A VARIETY OF REASONS.

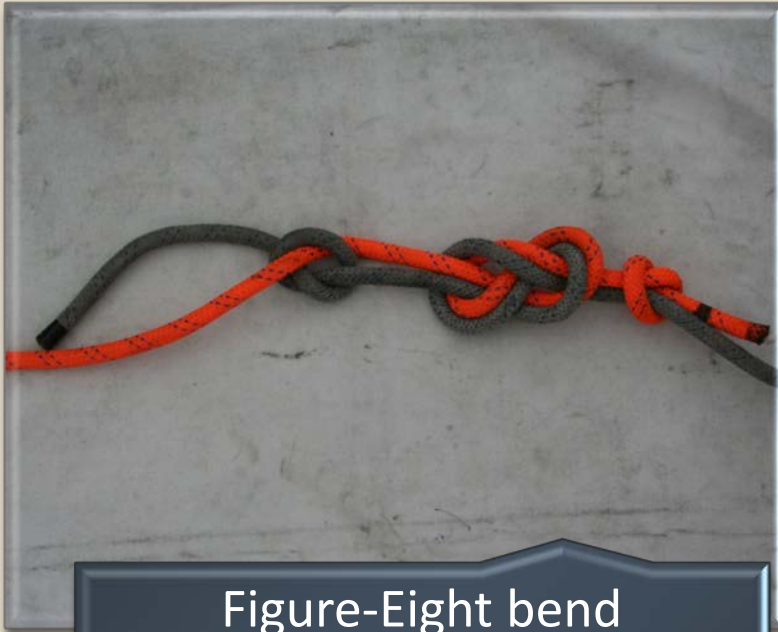


Figure-Eight bend

- Used to tie together two ropes of equal diameter



Figure-Eight on bight

- Used to tie closed loop

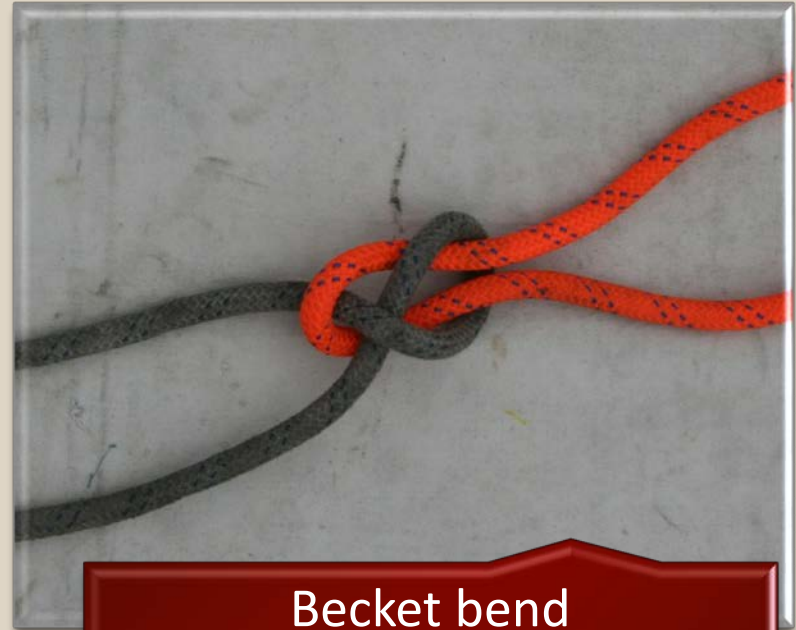


# FIREFIGHTERS USE SEVERAL TYPES OF KNOTS FOR A VARIETY OF REASONS.



Figure-Eight follow through

- Used for securing objects

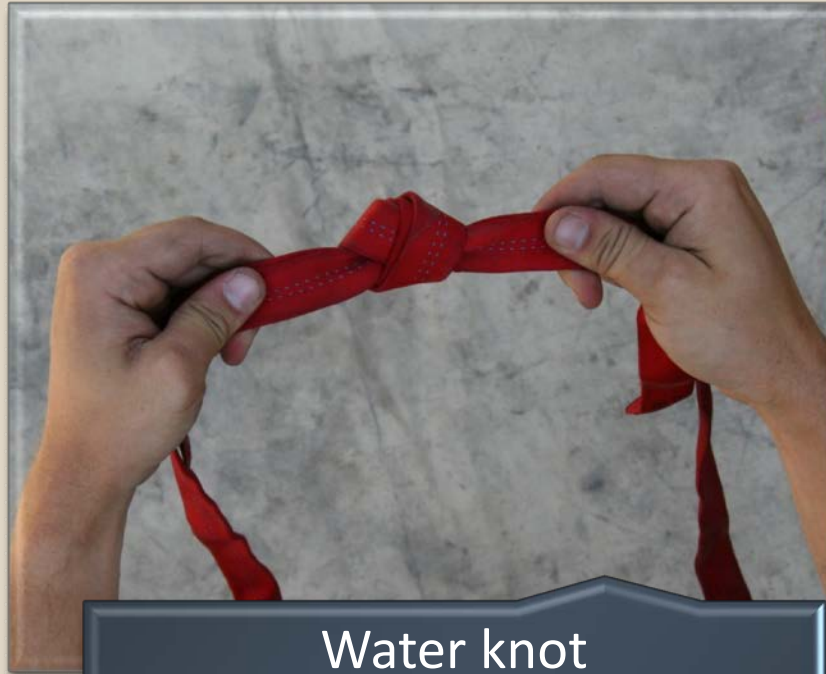


Becket bend

- Used joining unequal diameter rope or chain, not life safety



# FIREFIGHTERS USE SEVERAL TYPES OF KNOTS FOR A VARIETY OF REASONS.



Water knot

- Used for joining two pieces of webbing, tendency to slip





# ROPES AND WEBBING HAVE FIVE MAIN USES AT EMERGENCY INCIDENTS.

Rescue (life safety rope only)

Hoist tools, equipment

Barrier to control zone

Search line

Stabilization

***Never exceed the load ability of a rope.***



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# SPECIALLY TRAINED RESCUERS USE LIFE SAFETY ROPE, NEVER UTILITY ROPE.



Rappelling



Lifting victims and rescuers

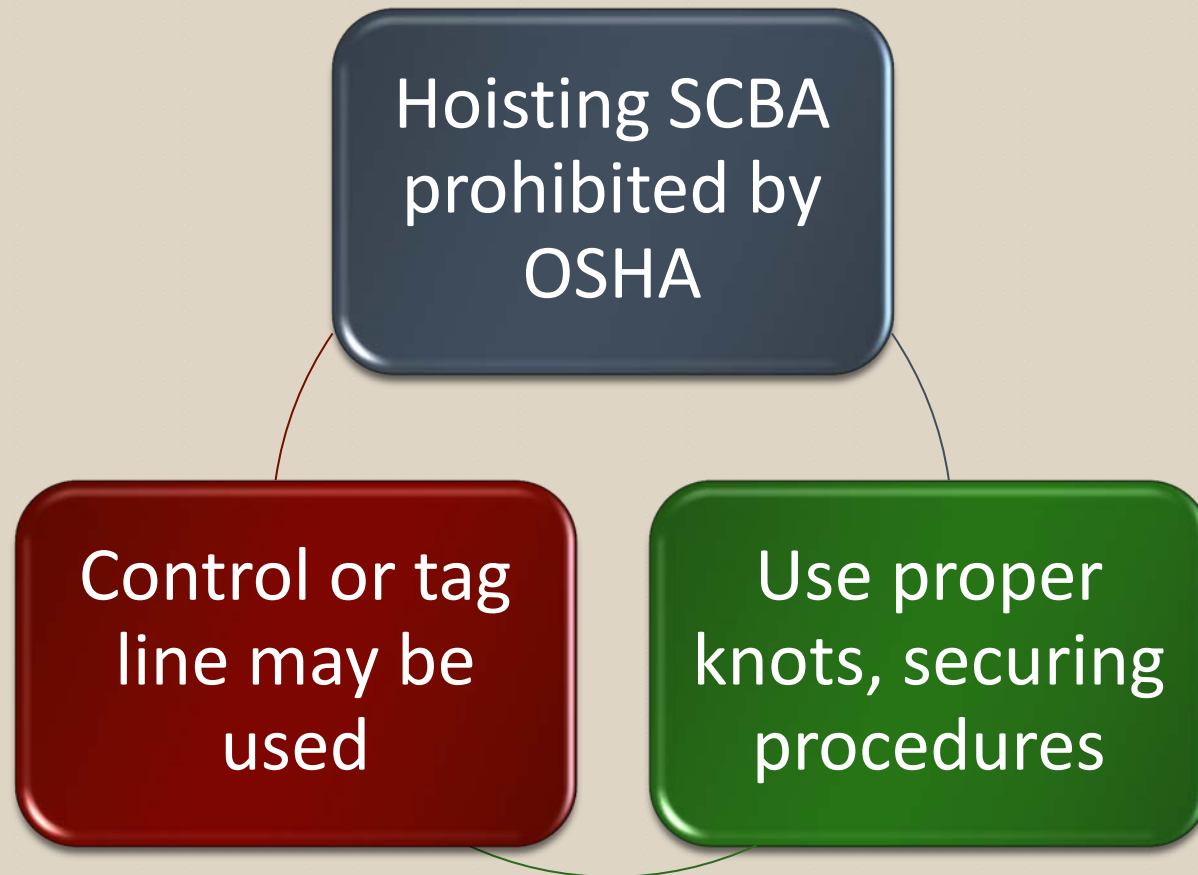


Ice, swift water rescue



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# ALWAYS KEEP SAFETY FIRST WHEN HOISTING TOOLS AND EQUIPMENT.



# CARABINERS AND PULLEYS ARE THE MOST COMMON TYPE OF ROPE EQUIPMENT USED IN HOISTING.



Connects rope to  
mechanical gear

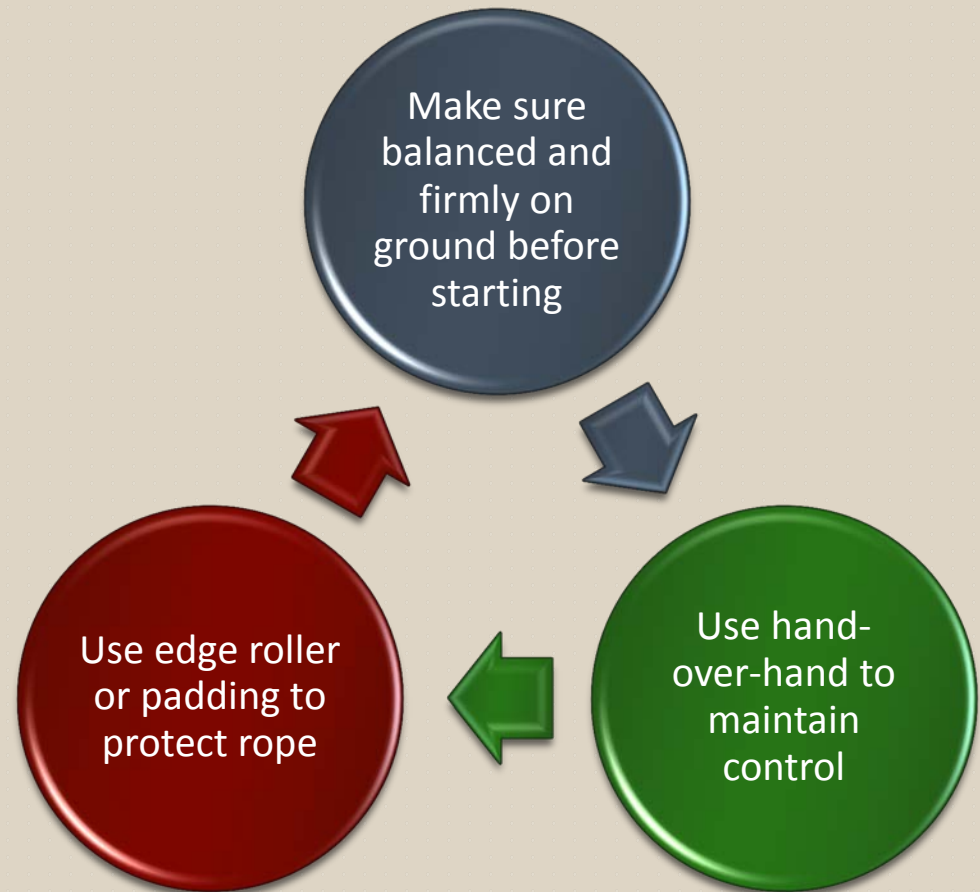
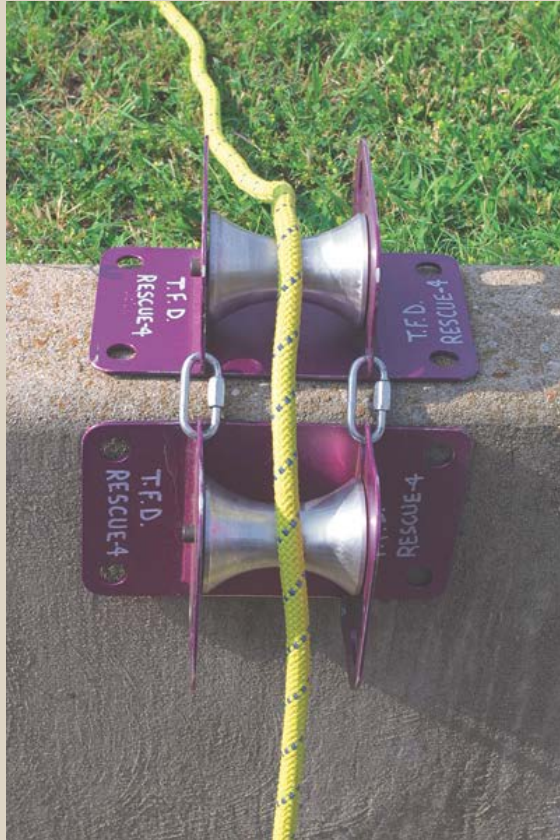


Creates mechanical  
advantage



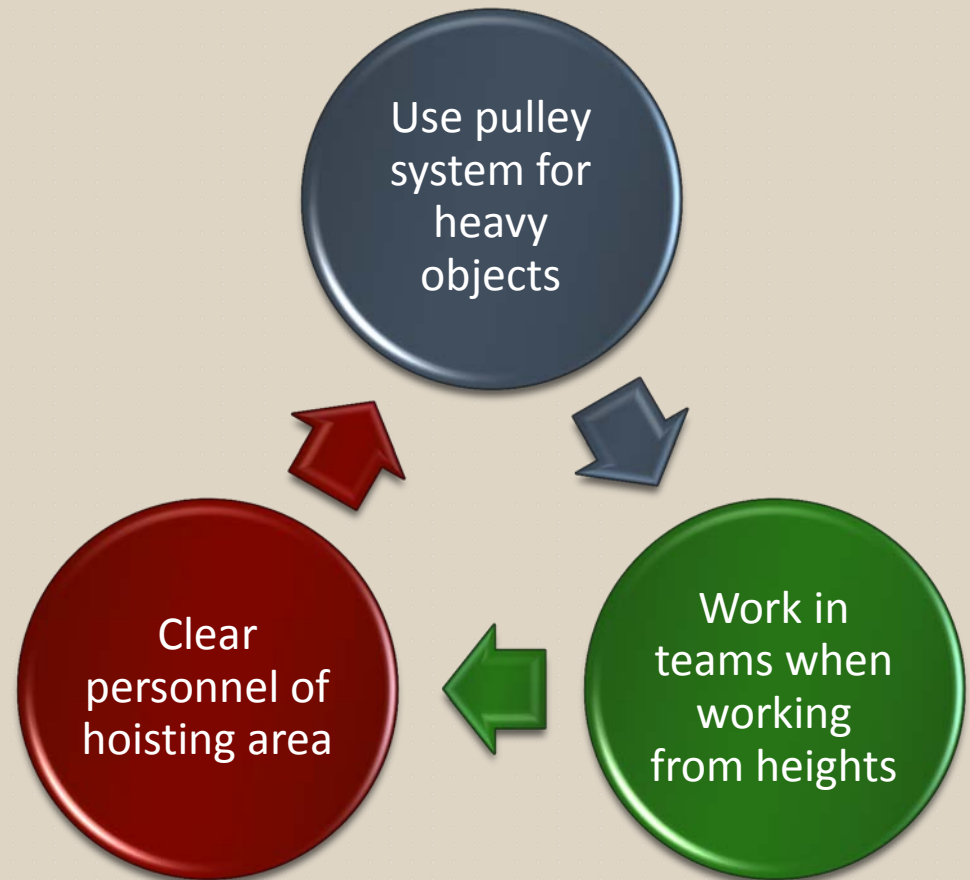
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# FOLLOW THESE GENERAL SAFETY GUIDELINES WHEN HOISTING.

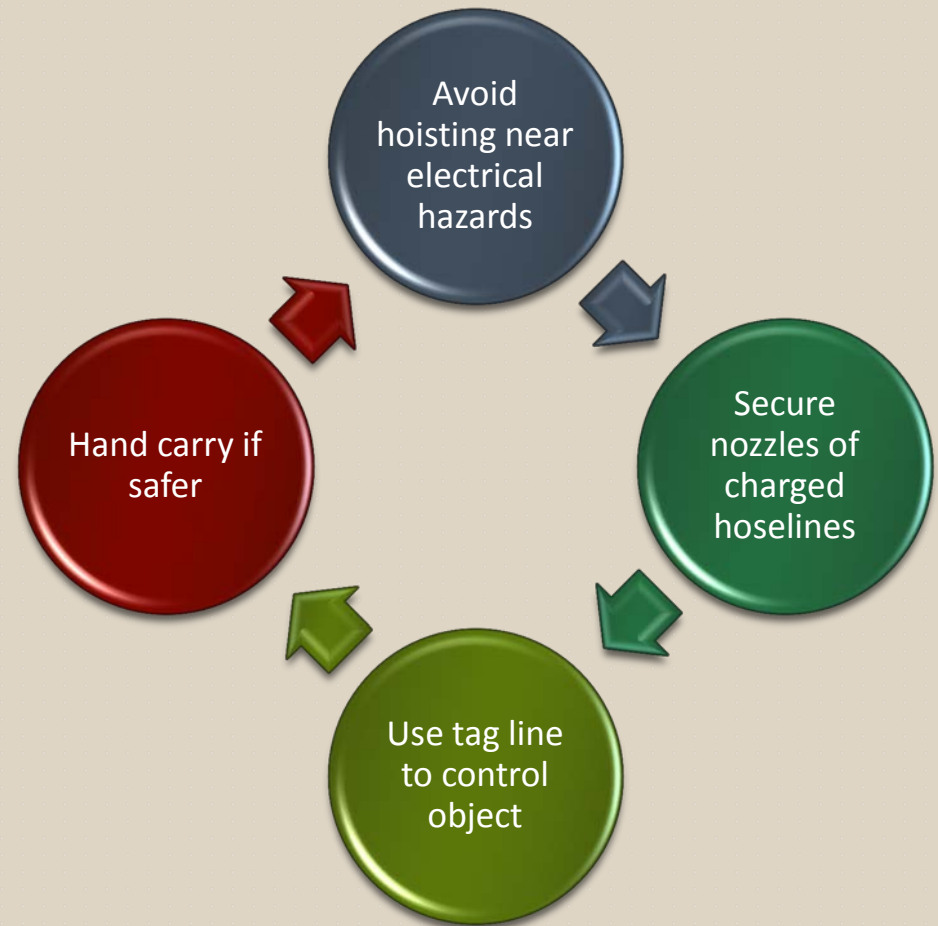




# FOLLOW THESE GENERAL SAFETY GUIDELINES WHEN HOISTING.



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# FIREFIGHTERS MUST LEARN TO HOIST SEVERAL TYPES OF EQUIPMENT.



Axe



Pike Pole



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# FIREFIGHTERS MUST LEARN TO HOIST SEVERAL TYPES OF EQUIPMENT.



Ladder



Dry hoseline

- Often fastest and safest
- Dry hoseline safer than charged



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# FIREFIGHTERS MUST LEARN TO HOIST SEVERAL TYPES OF EQUIPMENT.

- Knot and tagline through closed handle



*Courtesy of Shad Cooper/Wyoming  
State Fire Marshal's Office*

Rotary saw



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# UTILITY ROPE HAS TRADITIONALLY BEEN USED FOR CONTROL ZONE PERIMETERS.



Courtesy of Shad Cooper/Wyoming State Fire Marshal's Office



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# SEARCH LINES HELP FIREFIGHTERS STAY IN CONTACT AND PROVIDE A PHYSICAL MEANS OF FINDING AN EXIT.



*Courtesy of Shad Cooper/Wyoming State Fire Marshal's Office*



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# UTILITY ROPE IS USED TO STABILIZE OBJECTS AND PREVENT VEHICLES FROM FALLING OR ROLLING OVER.



1. Tie to strong, stationary object

2. Tie to vehicle



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# BEFORE STABILIZING ANY OBJECT, BE SURE TO COMPLETE THE FOLLOWING.

Ensure rope, webbing, anchors strong enough to bear weight

Tighten knots, have safety knots in place

Ensure all attachment points secure, will not pull free

Ensure personnel are clear in case line snaps, breaks



# SUMMARY

To use them safely and effectively, you must know the various types of ropes, their applications, and how to tie a variety of knots quickly and correctly.

