Knots & Bends: Most persons call any method of tying rope or cordage a knot. Technically that statement is correct and we will often do the same in this class. However, during the learning process we will continue with the four basic classifications of knots – Knots, Bends, Hitches and Ornamentals. This section will deal with several basic knots you will be required to tie and all of the bends. We will follow this section with sub-categories of “Loop Knots” and “Slipped Knots”.

- Knots are tied with the end of a rope, or on the bight, or upon its own standing part. Pay close attention to the working end, standing part, and bitter end when learning a new knot. We will use several sub-categories of knots which are generally application driven. Examples in this segment are “stopper knots” & “binding knots”. Learning the knots will be easier if you remember the use of the knot.

- Bends are used to fasten (bend) two rope ends together. There are exceptions to this definition and the Anchor Bend is one. As you will see, the anchor bend is more like a series of hitches and it is generally used to attach a rope to an object.
Stopper Knots: Generally tied to keep a rope end from slipping out of a hole or block. It can also be used in the end of a rope to temporarily prevent the strands from unlaying.

The Overhand Knot is the simplest & smallest of all knot forms. As a stopper knot it should only be used on small cord & twine, since it jams and is hard to untie.

The Figure Eight Knot is the best form of stopper knot for use with ropes. It will not jam and is larger, stronger and doesn’t injure the rope fibers as much.

Begin by taking the working end over the standing part.
Binding Knots: These knots are used for lightweight applications such as tying a bundle snugly together. Both ends of a rope, usually small cordage, will be used. Sequential tying procedures are shown on the following two slides.

Square Knot

Surgeon’s Knot

Do Not tie or use a Granny Knot or a Granny Surgeon’s Knot.
**Square or Reef Knot:** The reef knot was traditionally used at sea for reefing and furling sails. Ashore the square knot is used as the universal package knot. Though often used, it is a dangerous knot for tying two ropes together (see sheet bend) due to its low efficiency rating.

Although the procedure can be reversed, the generally accepted steps are: Right working end over the left end (1), twist (2) and continue by taking the same working end (now on the left) over the other end (4). Twist and pull through. Correctly tied Square Knot.
Surgeon’s Knot: The surgeon’s knot is often used for twine—chiefly to keep the first tie from slipping before the knot is completed. This is the traditional knot used by medical personnel when applying sutures. It is an excellent binding knot.

Start the surgeon’s knot the same as a square knot and then add an extra twist to keep it from slipping before you finish.
**Bends**: A bend is tied when it is necessary to lengthen a rope by joining it to another rope. A bend should be used for a temporary purpose only – if the joining is intended to be permanent, a splice is stronger and safer.

The Sheet Bend is the fastest and probably the best method of joining two lines, especially if the lines are of unequal diameter. It is the “common utility” bend because it has a reasonable efficiency and unties easily. When joining slick, thick, unequal or stiff material, the double sheet bend is recommended. Sequential tying procedures for both bends are shown on the following slides.

**Sheet Bend**

**Double Sheet Bend**
Sheet Bend: The sheet bend is also commonly called a becket bend although that name technically only applies when attaching a working end to a spliced eye. The sheet bend is made by forming a bight in one rope and a half hitch with the other rope – shown in the sequential photos below. Generally speaking, the ends should come out on the same side of the rope for maximum efficiency. If the ends come out on opposite sides it is referred to as a left-handed sheet bend.

1

2

3

4

5

Left-handed Sheet Bend

Correctly Tied Sheet Bend
Double Sheet Bend: Use this bend when joining synthetic or dissimilar sized lines. If the lines to be joined are unequal in size, the larger line should form the bight and the smaller line should attach with the double half hitch. Follow the sequential photos (#1 - #4) for tying the single sheet bend (previous slide). Instead of drawing the bend up after the first half hitch for a single sheet bend, continue with another turn (#5 - #6) and then draw up the bend (#7 - #8).
**Carrick Bend:** This bend is used for joining heavy ropes, hawsers, and cables together. The carrick bend will not jam and it unties relatively easily. It will always draw up correctly under a strain which is important because very heavy ropes cannot be fully tightened by hand. A sequential tying procedure is shown on the following slide.
Tying a Carrick Bend: With one rope end form an underhand loop (White Rope) with both the free end and the standing part pointing away from you. Start the second rope end beneath both sides of the loop (Black Rope) and cross it over the standing part of the first rope (White Rope). Continue by passing it under the free end of the first rope and over the left side of the loop. Cross it under itself and let the second free end lie over the right side of the loop. Draw the bend tight by applying a strain to the two standing parts of the adjoining ropes or cables.
Anchor Bend: (Fisherman’s Bend) This is an excellent bend due to its’ simplicity and great strength. It will not slip, chafe, or jam. After withstanding severe tension, it can be untied when the strain on the line is eased. We use this not extensively for attaching marker floats and anchors to a variety of nets. A sequential tying procedure is shown below and on the following slide.

1. Start the bend by applying a round turn to the object you intend to attach the rope to (1-4).
2. Then pass the working end over and under the standing part and through the round turn forming a half hitch (5-6).
Finishing the Anchor Bend: Although the anchor bend is also called a fisherman’s bend, in this class we will refer to it as the anchor bend so as not to confuse it with a fisherman’s knot. Note the slight difference between the drawing in your handout and the photos shown below when completing the second half hitch or “keeper”. Try to avoid using the “larks head” shown as incorrect below.

After forming the half hitch through the round turn, follow it with another half hitch around the standing part only (7-8). This extra half hitch is referred to as the “keeper” and helps secure the bend.

Correctly applied Anchor Bend

Avoid incorrectly applying the second half hitch.