
Venture
Scouts

ADVENTURES AFLOAT

#ScoutingIrelandOnTheWater

Venture Navigators Mate

CHARTING THE WAY
DEAD RECKONING

At sea there is often no reference points to use for navigation, the visibility can be poor with weather or we have could have no GPS or no power for the GPS!
But good seamanship can keep us from getting lost!
Dead Reckoning is one method using some basic information.

Last Known Position ✓
Vessels Heading ✓
Distance ✓
(or Speed & Time)

Step 1 - Reference your last known position. This is known as a Fix and should always be added to the chart incase needed later.

Step 2 - With your route details, set your plotter to your heading and your dividers to distance.

Step 3 - Marry this information and plot it on the chart from your last known position.

Step 4 - Mark the end with a + and a timestamp. This is useful for the next navigator on duty!

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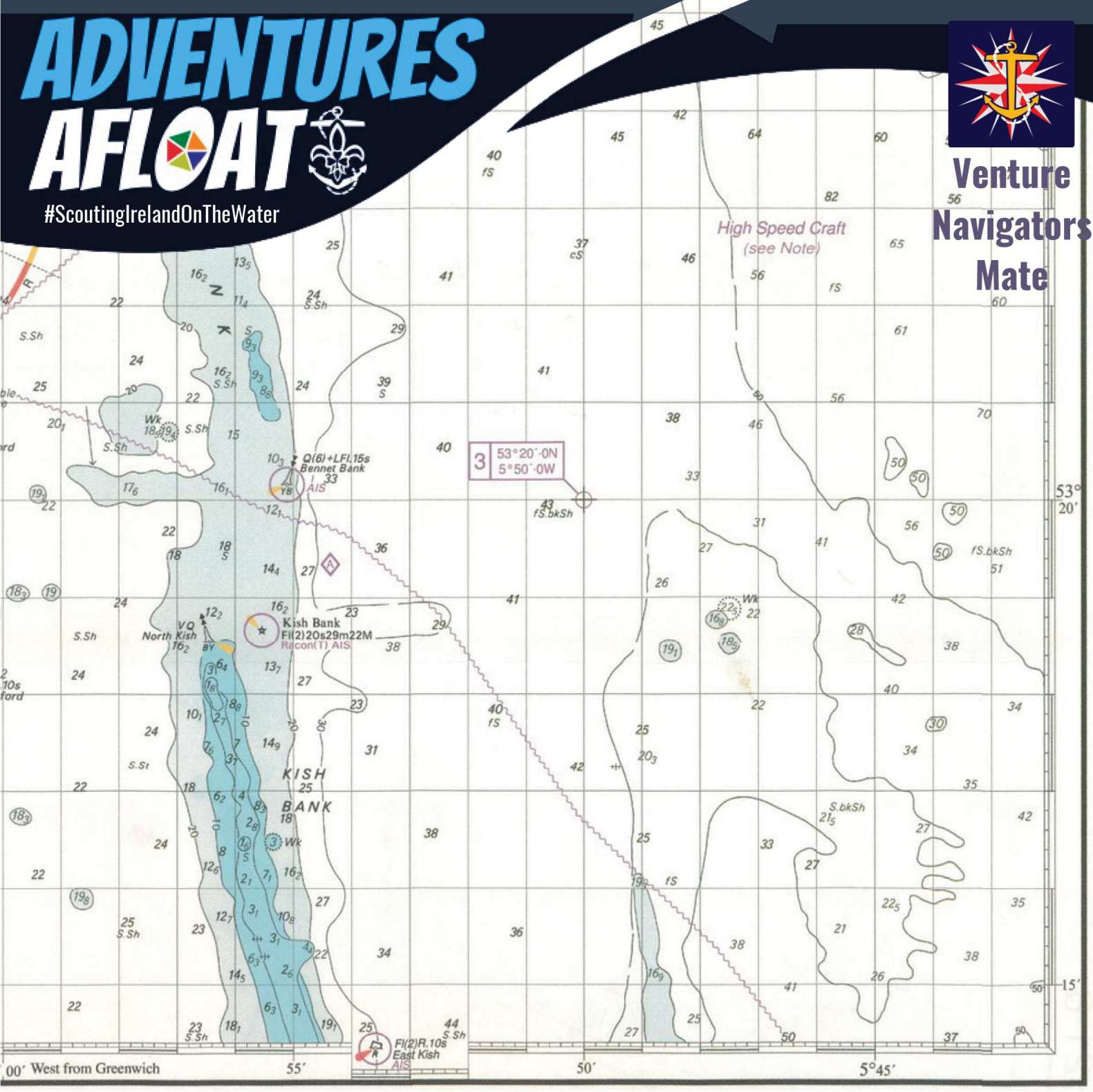

What is its dead reckoning position?

1. Last known position (53°18.6'N, 005°55.6'W) your ship sailed 4nm on a heading of 125°T.
2. Last known position (53°22.4'N, 005°44.6'W) your ship sailed 9nm on a heading of 250°T.

⊙ 0935
Position Fix

✚ 1410
Dead Reckoning

Water Track

You will need to ensure your plotting skills are still up-to-scratch! Don't forget the difference between True bearings and Magnetic bearings!

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CHARTING THE WAY

TIDAL DIAMONDS

We know the tide comes in and out, but there a more ways than tidal height that will impact our activities. Knowing the direction and speed of the tide can be a dealbreaker for a successful and safe passage.

Admiralty Charts will often feature a **Tidal Diamond**. This purple-lettered diamond is marked on a specific location where tidal stream data has been recorded.

Once we locate the tidal diamond, all we need to know is when High Water is.

Hours	Geographical Position		
	Directions of streams (degrees)	Rates at spring tides (knots)	Rates at neap tides (knots)
Before High Water 6			
Before High Water 5			
Before High Water 4			
Before High Water 3			
Before High Water 2			
Before High Water 1			
High Water			
After High Water 1			
After High Water 2			
After High Water 3			
After High Water 4			
After High Water 5			
After High Water 6			

	A 49°59′·4 N 6 24·9 W			B 49°54′·7 N 6 22·2 W		
−6	252	1·0	0·5	320	0·4	0·2
−5	318	0·5	0·3	042	0·3	0·1
−4	034	0·9	0·5	097	0·6	0·3
−3	055	1·6	0·8	116	1·0	0·4
−2	062	1·9	0·9	121	0·8	0·4
−1	066	1·6	0·8	125	0·7	0·3
0	072	0·9	0·5	161	0·2	0·1
+1	102	0·4	0·2	224	1·0	0·4
+2	206	0·7	0·4	233	1·1	0·5
+3	227	1·3	0·6	241	1·2	0·5
+4	239	1·7	0·8	262	1·5	0·7
+5	240	1·7	0·8	262	1·2	0·5
+6	245	1·2	0·6	296		

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TIDAL DIAMONDS

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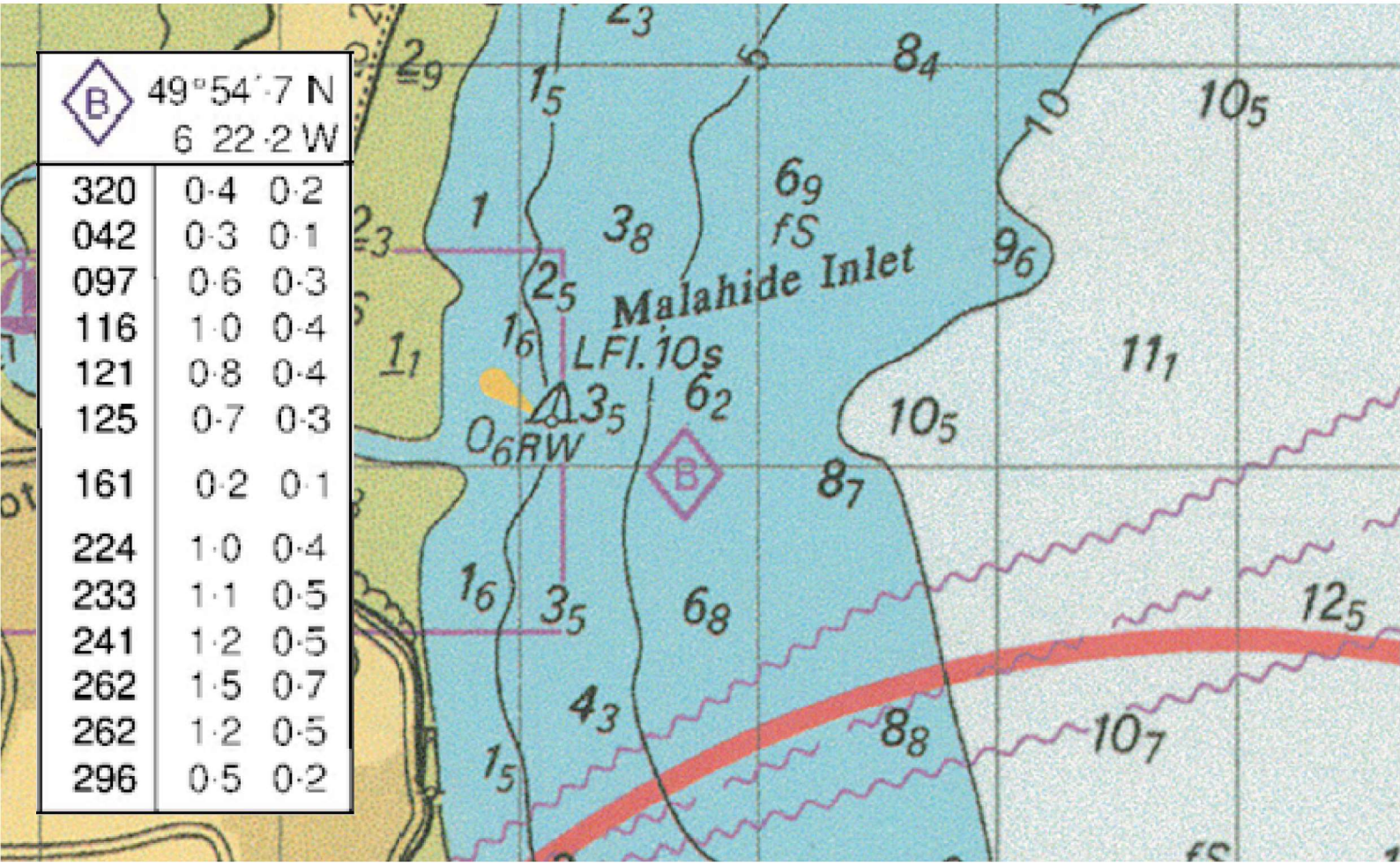
Using Tidal Diamond B in the below scenario;

1. What direction is the tidal stream 2-hours after HW.
2. What is the tidal rate at HW on a Spring Tide.
3. Draw a tidal stream direction arrow of 3-hours before HW.



Why Are Tidal Diamonds Important?

- **Safety** - They help avoid strong currents that can carry your boat into danger.
- **Efficiency** - Plan routes that take advantage of favourable currents.
- **Precision** - Essential for accurate navigation in areas with strong tidal influences.

A small boat may only have a boat speed of 2-3 knots. So knowing the tidal stream is important!

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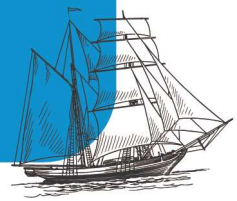
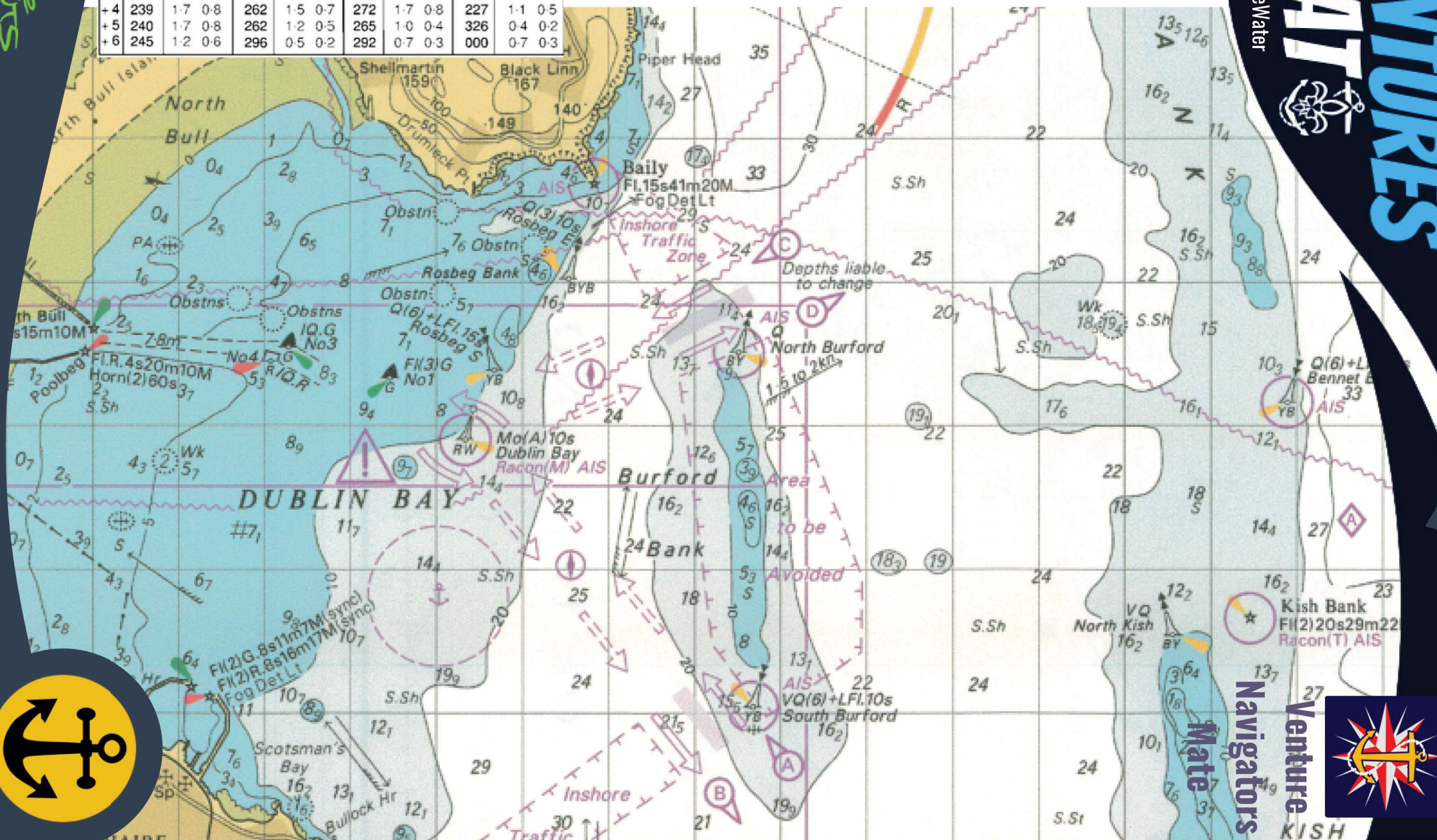
	A 49°59·4 N 6 24·9 W			B 49°54·7 N 6 22·2 W			C 49°54·1 N 6 19·1 W			D 49°55·8 N 6 13·4 W		
−6	252	1·0	0·5	320	0·4	0·2	300	0·4	0·2	007	0·9	0·4
−5	318	0·5	0·3	042	0·3	0·1	020	0·1	0·0	011	1·1	0·5
−4	034	0·9	0·5	097	0·6	0·3	109	0·7	0·3	017	1·6	0·8
−3	055	1·6	0·8	116	1·0	0·4	110	1·2	0·5	022	1·7	0·8
−2	062	1·9	0·9	121	0·8	0·4	111	1·5	0·7	027	1·4	0·7
−1	066	1·6	0·8	125	0·7	0·3	111	1·6	0·7	035	0·9	0·4
0	072	0·9	0·5	161	0·2	0·1	111	1·7	0·8	110	0·2	0·1
+1	102	0·4	0·2	224	1·0	0·4	125	1·5	0·7	201	2·0	0·9
+2	206	0·7	0·4	233	1·1	0·5	190	0·1	0·0	188	2·9	1·4
+3	227	1·3	0·6	241	1·2	0·5	275	1·3	0·6	202	2·2	1·0
+4	239	1·7	0·8	262	1·5	0·7	272	1·7	0·8	227	1·1	0·5
+5	240	1·7	0·8	262	1·2	0·5	265	1·0	0·4	326	0·4	0·2
+6	245	1·2	0·6	296	0·5	0·2	292	0·7	0·3	000	0·7	0·3

If HW is @0900, Calculate the best time to leave Dublin Port to take advantage of favourable currents headed out to sea.





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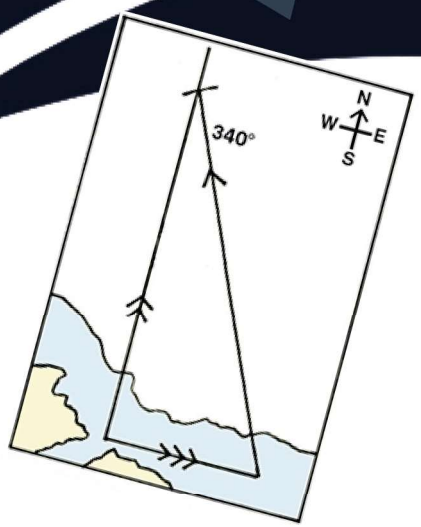

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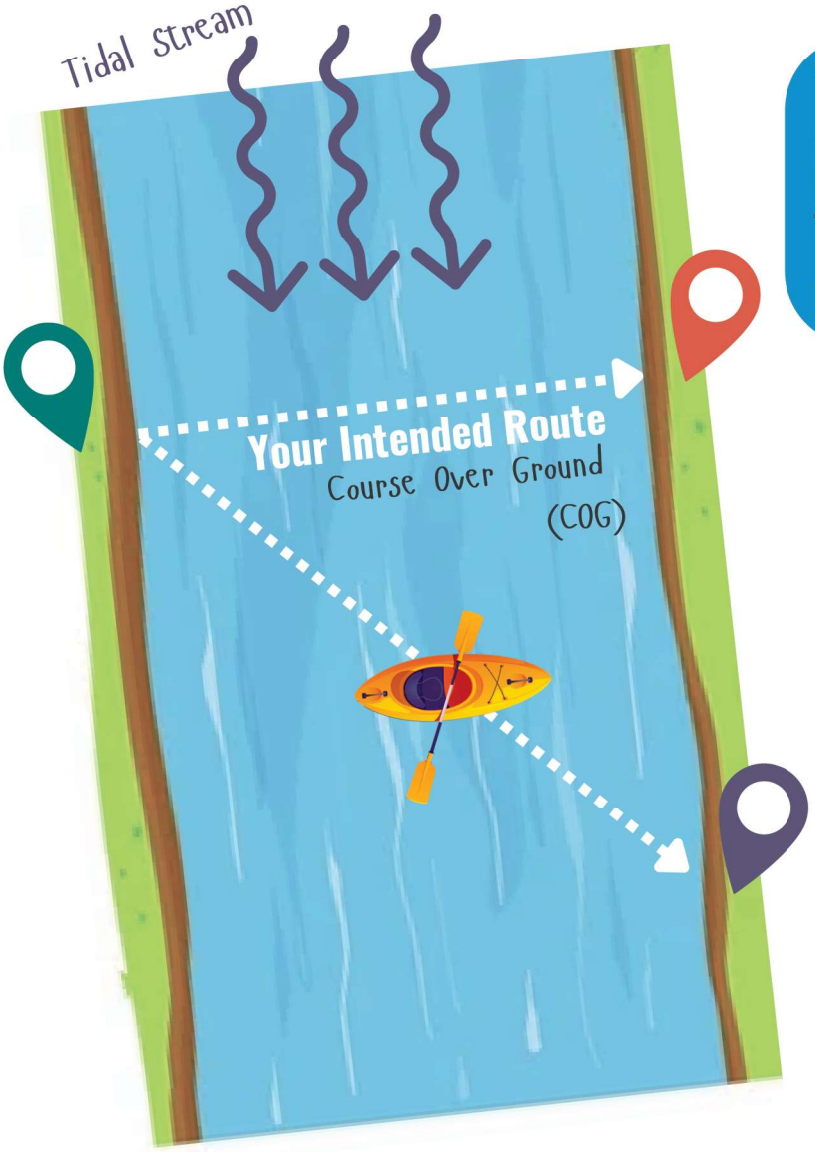
CHARTING THE WAY
COURSE TO STEER

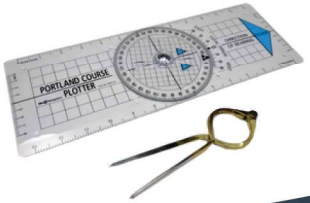
On the water, our boat isn't just moving forwards - it's also being pushed sideways by tide, currents and wind.
Without adjusting for this, we would drift off-course and miss our port!
Course to Steer is the method used to calculate and compensate for this.



We can imagine, trying to cross a river; if we aim straight for our destination, the currents will push us off-course and potentially into danger.

THE ESSENTIALS

- **Tidal Streams** - we need to know the set and rate of the tide, via tidal atlas or tidal diamond.
- **Tide Tables** - we need to know the HW time so we can be accurate on tidal streams.
- **Estimated boat speed** - this will help us determine how many hours of tide.
- **Chart Tools** - we need a plotter and dividers to calculate our CTS.



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CHARTING THE WAY

COURSE TO STEER

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INSTRUCTIONS

1. Draw your intended route.
   Draw the line through your destination.
   This is known as your Course Over Ground.
   Check the route for hazards, like shallows!

Your COG is always marked with x2 arrows.

2. Identify the closest tidal diamond, HW on your activity day and the time of day with most favourable tidal direction for your passage.

D	49°55'·8 N 6 13·4 W
007	0·9 0·4
011	1·1 0·5
017	1·6 0·8
022	1·7 0·8
027	1·4 0·7
035	0·9 0·4
110	0·2 0·1
201	2·0 0·9
188	2·9 1·4
202	2·2 1·0
227	1·1 0·5
326	0·4 0·2
000	0·7 0·3

For this example, because we intend to travel South to North, we will find a stream that is going the same direction.

This seems to be as good a time as any.

We will set off 2-hours before High Water.

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CHARTING THE WAY

COURSE TO STEER

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INSTRUCTIONS

3. Now we know our tidal set and rate, we can draw this on the chart.

011	1·1	0·5

Tide bearing | Speed (Springs) | Speed (Neaps)

Don't forget to determine whether we are on Spring or Neap tides.

Let's assume we're on Springs.

- Set your plotter to 011° and draw this line from your starting point.
- If you sat here for 1-hour, the tide will move you 1.1 nautical miles this direction.

Remember, 1 knot = 1 nautical mile per hour.

- Set your divider to 1.1 nautical miles to determine the length of your tide line. Rub out any excess line.

This is known as your Tidal Vector and is marked with x3 arrows.

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INSTRUCTIONS

4. Next we need to consider and account for the effect of our boat speed...

- Using your dividers, measure the length of our Ground Track. (COG)

In our example, the Ground Track is 6nm.

- Estimate the average boat speed with the expected conditions and experience of crew.

Sailing = 5-7 knots
Rowing = 2-5 knots
40hp RIB = 15-20 knots

Assuming we are sailing, we will take an average boat speed of 6 knots.

(6nm)

- Set your dividers to the average boat speed.
- Put one end of the dividers to the end of your tide line. Where the other end intersects your Ground Track, put a mark.

6 nautical miles @6 knots = 1 hour

Knowing how many hours our route will take will determine how many tidal streams we account for.

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INSTRUCTIONS

5. With the boat speed marked on the Ground Track, now draw a line from your tide line to this point.

Do NOT draw a line directly from your tide line to your end destination!
While easy and neat, it is not correct!

This new line is called your Water Track.

- With your plotter, get a bearing for the Water Track.

This is your Course to Steer heading.
Remember, any bearing taken from the chart will be in °True.
We need to convert to °Magnetic if we are to navigate on it with our compass.

The Water Track is always marked with x1 arrow.

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CHARTING THE WAY

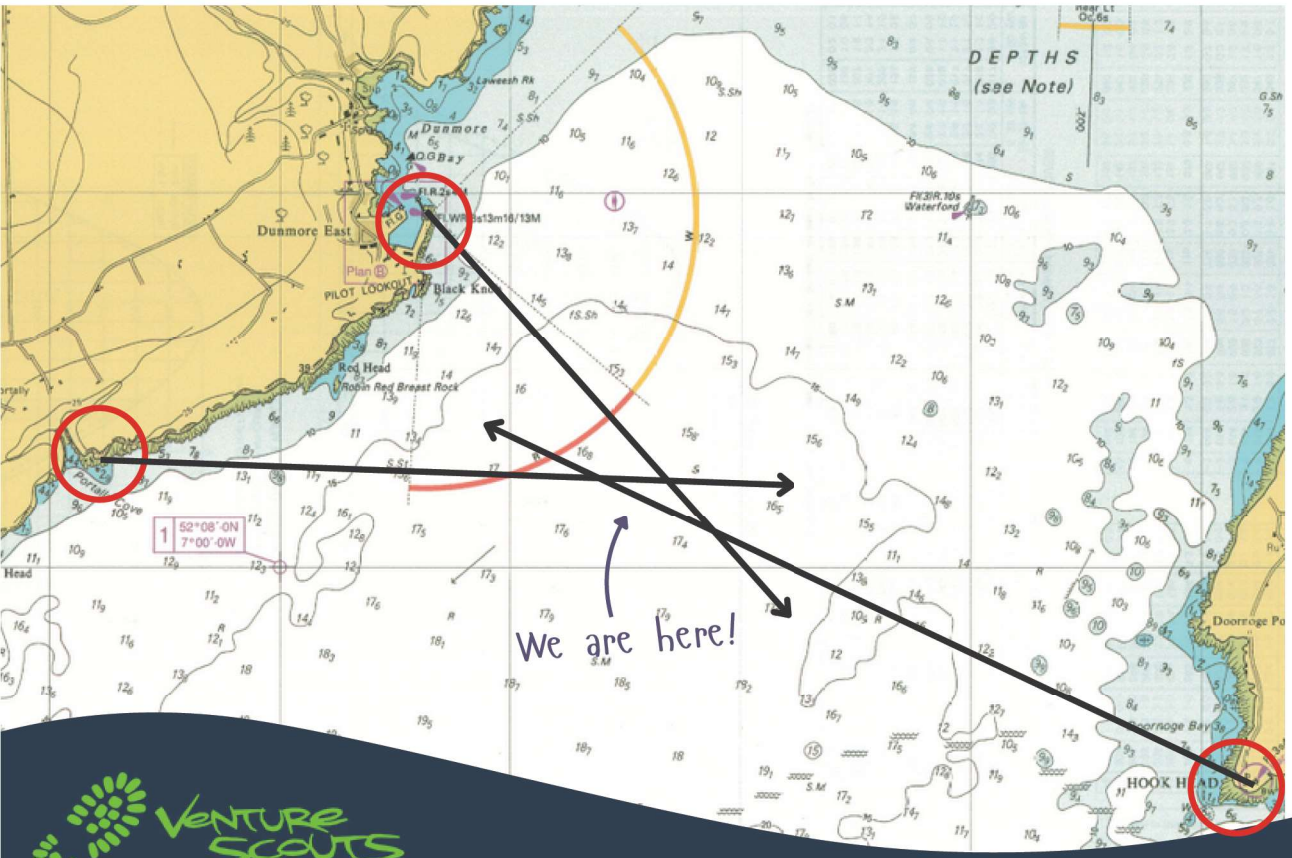
3-POINT FIX

You're out on a passage down the coast and something goes wrong;

- Power is lost so you no longer have GPS.
- Weather rolls in and you lose track of your position.
- You suspect your anchor is dragging and need to track your position.
- You need to navigate at night by buoy & beacon.

You will need; Hand-Bearing Compass, Chart, Plotter, Pen & Paper.

A 3-Point Fix is the nice method to manually find your position by taking a compass bearing of x3 shorebased landmarks that we can then plot on our chart.
It matters what landmarks we are using. You must be able to recognise the feature on the chart, so that streetlamp is no good. Ideally, features should be far apart.



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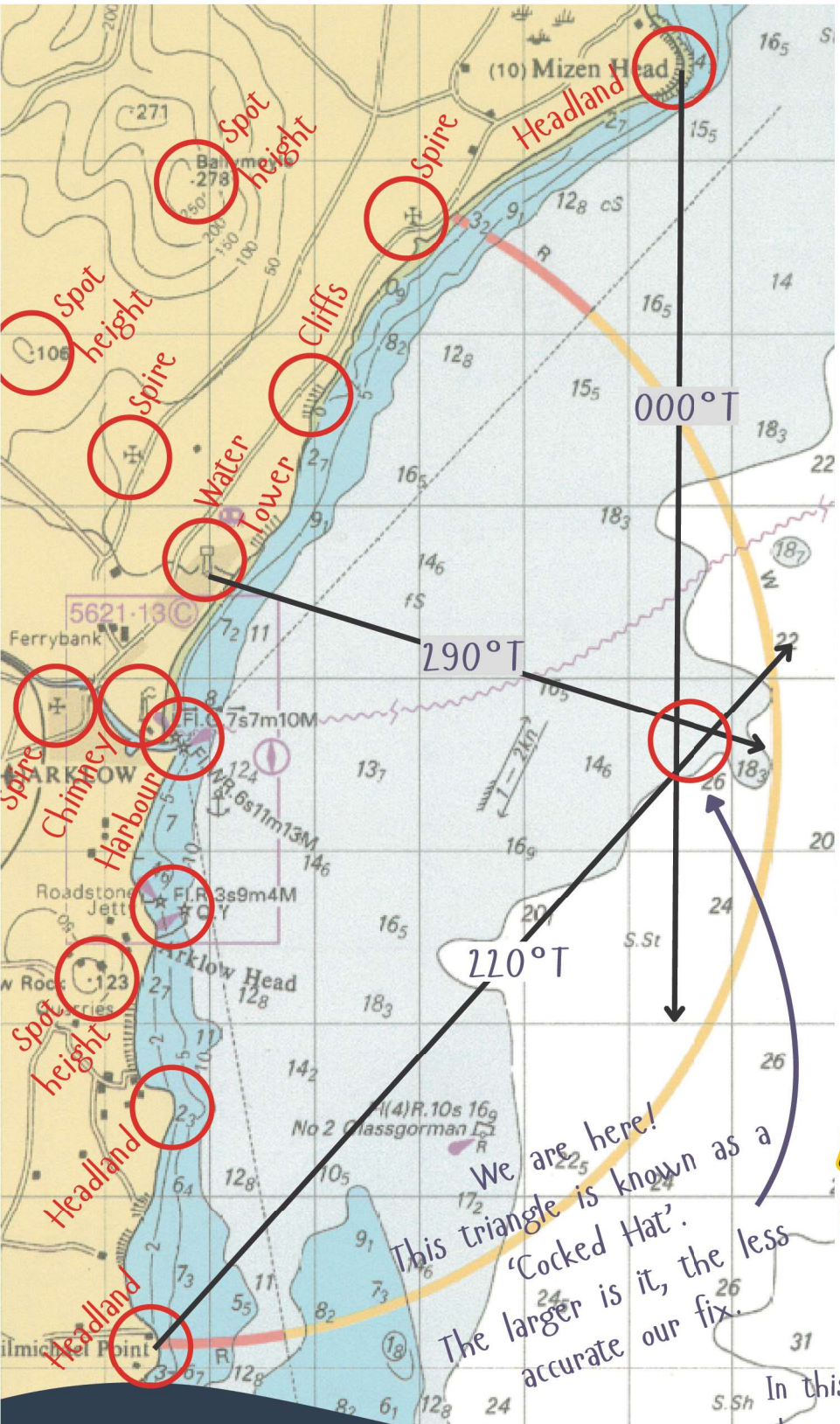
3-POINT FIX



WHERE AM I?

1. Have a look around and identify x3 landmarks that we can see from our boat and on our chart.

Maximum spread of landmarks = minimum error.

2. Take a bearing from your boat to each of these landmarks and write them down!

The quicker you do this the better as you boat is probably moving and hence so are your coordinates!

3. Remember to convert your bearings from Magnetic (compass) to True (chart)!!
   - Calculate the Variation.
   - Add/ Remove this from your Magnetic bearing to get your True, so you can plot on chart.

East Least (-)
West Best (+)

This was our plotting memory aid...

...but it was for TRUE to MAGNETIC.

In this case we are doing the opposite. So the rule is also opposite.

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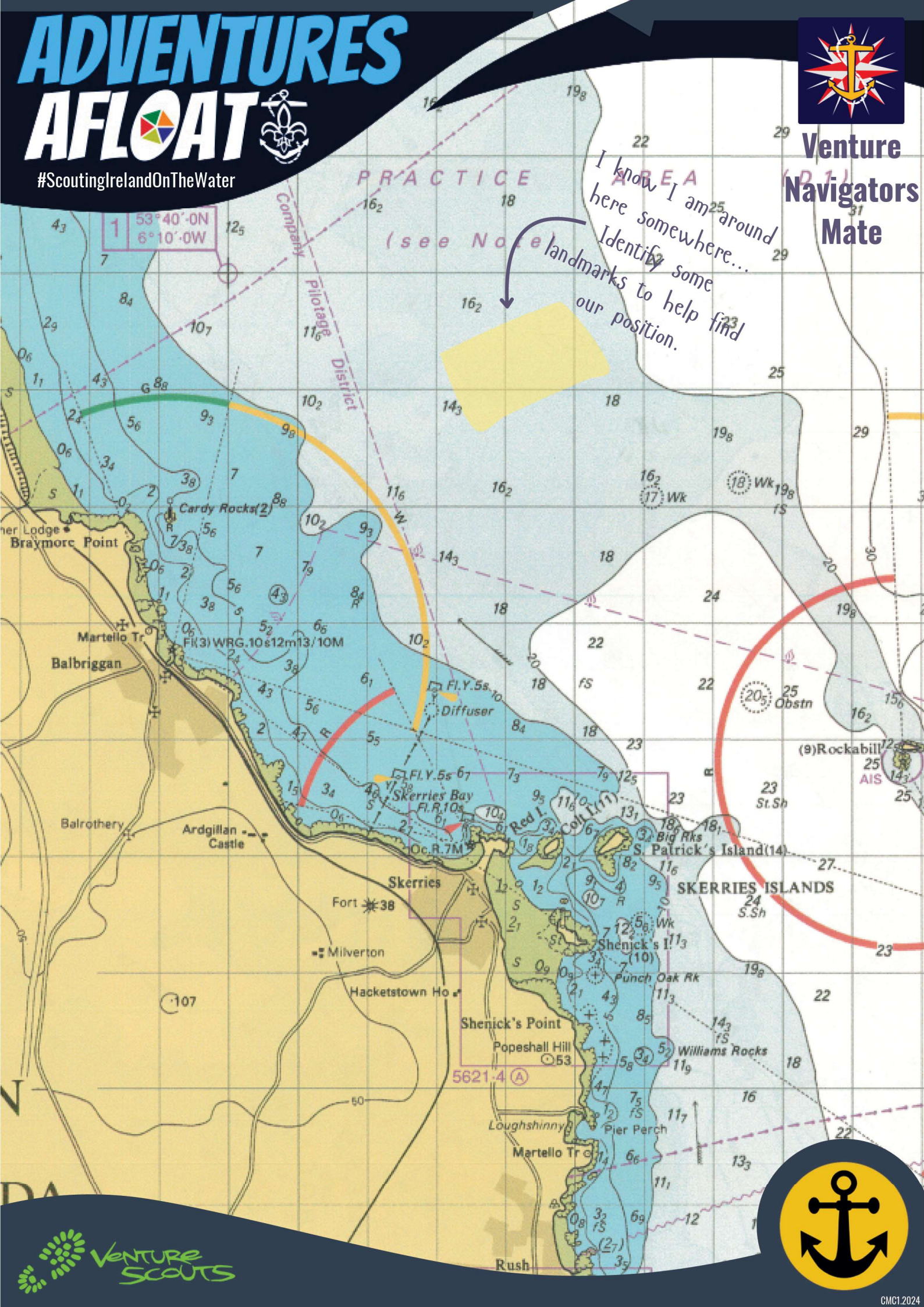

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FIND ME!

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1. Convert the bearings to °T.
2. Plot the bearings on the Chart.
3. Calculate my approx. Coordinates.
4. What is at this Location.
5. What heading is the Safe Water Buoy.

Irelands Eye Spot Height (65) = 160°M

Velvet Strand Church Spire = 200°M

Lambay Spot Height (123) = 55°M

Variation is 2°W

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INLAND NAVIGATION

Many of the "steering and sailing" rules which are used at sea are also used on the inland waterways.

There are some special rules and bye-laws that apply to inland waterways;

1. **At a Bridge,** vessels going upstream must give way to a vessel coming downstream.
2. **Approaching a Lock,** always give way to vessels exiting the lock.
3. Vessels shall not **overtake** in any part of the navigation less than 13m in width.
4. **Speed Limits** and must be adhered to and be conscious of your boat wash.
5. **Permits** may be required to operate within each specific waterway.
6. **Air Draft** is important for bridge clearance.

Greenways Ireland

BLUEWAYS Ireland

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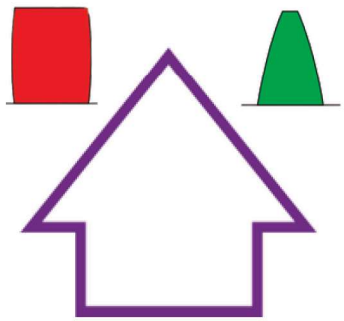
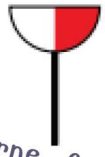
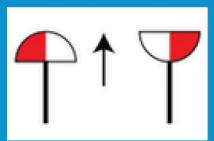


Erne System



Erne System

The Erne Navigation System uses different Port and Starboard markers.



DIRECTION OF BUOYAGE

The direction of buoyage indicates the "safe passage" route and which side to navigate the buoyage.

The direction of buoyage in Ireland is as above when;

- **Coming into Harbour** (from the sea)
- **Proceeding Upstream**

Learn more about the biodiversity on our inland waters

SCOUTS

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CLOUDY WITH A CHANCE OF...

Yes it is fun to daydream making shapes out of fluffy clouds, but clouds can add much more value to your adventures afloat if you know what you're looking for.

- **Anticipate Weather Shifts**
  Recognising cloud formations allows you to predict rapid weather shifts, giving you foresight to avoid unexpected and dangerous conditions.
- **Predict Wind Change**
  Observation can signal upcoming changes in wind patterns, helping you adjust your course or sail plan early for smoother, more controlled navigation.
- **Maximise Activity Time**
  By reading the clouds, you can extend your time on the water by recognising favourable conditions and steering clear of poor weather.

Clouds are made up of lots of tiny water droplets or ice particles floating in the sky at different heights.

As the sun heats Earths water, it turns into an invisible gas called water vapour in a process called evaporation.

The higher this vapor rises in the sky, the cooler it gets. Eventually it becomes cool enough to turn back into water and a cloud forms!

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WATER CYCLE

Evaporation

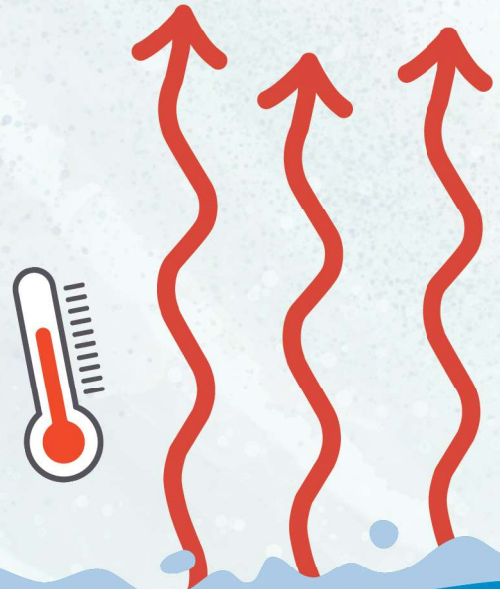
Heat from the sun causes water to evaporate

Condensation

As water vapour rises up high into the sky, it cools and turns back into a liquid, forming clouds,

Precipitation

When too much water has condensed, the water droplets in the clouds become too big and heavy for the air to hold them. And so they fall back down to Earth as rain.



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COMMON CLOUDS

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CUMULUS Fluffy

Fair weather clouds that look like fluffy balls of cotton. These clouds generally indicate fair weather, but if they grow large and tall they can bring thunderstorms...

STRATUS Blanket

Low grey cloud that often mean cold, misty rain or snow. Sometimes these clouds reach the ground and form fog.

CIRRUS Whispy

Are thin and whispy that appear high in the sky, often at altitudes of 20,000ft.
Composed of ice crystals and often associated with fair weather.

CUMULONIMBUS Rain-Bearing

Sometimes called 'thunderheads'. They are huge towering cloud with dark bottoms capable of producing wind, rain and lightening.

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CLOUD HEIGHTS

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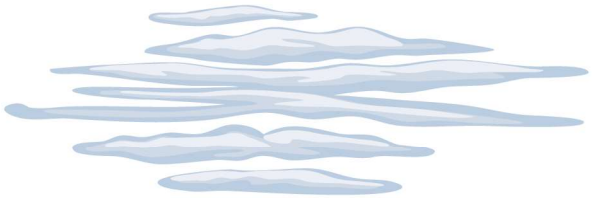
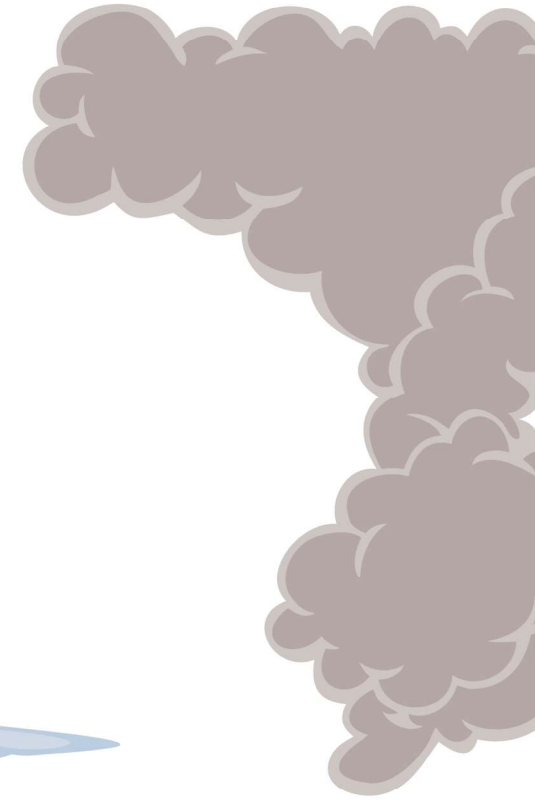
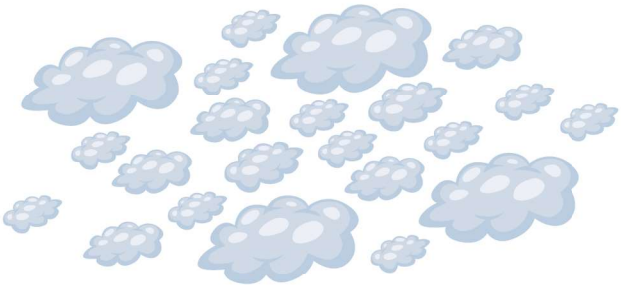


High

Cirrus

5km





Medium

Altocumulus

2km

Stratus

Low

Cumulonimbus

1km

Nimbostratus

Cumulus

Fog

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"I never leave home without it!"

-BP

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DIY EXPERIMENTS

CLOUD IN A JAR!

MATERIALS NEEDED

- Glass Jar w/ Lid
- Boiling Water
- Hairspray Aerosol
- Ice

INSTRUCTIONS

Step 1 - 1/3rd fill the glass jar with boiling water.

Step 2 - Rest the lid upside-down on top of the jar and fill the lid with ice.

Step 3 - Remove the lid and quickly spary hairspray into the jar and cover quickly. The spray gives the water vapor a surface to condense into tiny cloud droplets.

Step 4 - Watch as the cloud forms inside. Open the lid and set your cloud free!

The warm, moist air created from the hot water cools as it reaches the ice layer.
This air cooling requires a medium to condense, in the wild this is particles in the air. For our experiment, the hairspray facilitates this.

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EMERGENCY ACTION PLAN

Stuff will go wrong.
The trick is to #BePrepared so that when the unexpected does happen, we are well equipped and practiced to limit injury and are able to deal with it.

Familiarity with the **Safety Afloat** guidance document and developing our own Safety Afloat Toolbox will go a long way to mitigating accidents afloat.

*It takes just 2-minutes to drown. ⚠

An Emergency Action Plan provides activity leaders with a response pathway and structured guide of how to react in an emergency.

Breaking the EAP into different levels can really help us determine an appropriate response pathway.

Method of Action

1. Incident
2. Assess
3. Act
4. Report

Critical Incident Immediate Danger to Life
Serious Incident Medical Assistance Required
Operational Incident Minor Incident
Near-Miss Almost Incident Giving Rise to Concern

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CREATE YOUR OWN EMERGENCY ACTION PLAN

Split into small groups and give each group an activity;

- Swimming Pool Session
- Boating Session
- Hillwalking Activity

Remember, your EAP is a last resort. It will only be required when all your Controls have failed.

1. Identify potential incidents for the activity.
2. Categorise the different incidents into one of the four levels: Critical, Serious, Operational, Near-Miss.
3. Develop an action plan and response for each level of incident.
4. Decide how to report and record each type of incident.

eg. Session

Critical Incident Trapped in Rigging Underwater WHAT IS THE NEXT ACTION?
Serious Incident Hit in Head and Concussed WHAT IS THE NEXT ACTION?
Operational Incident Small Cut on Finger WHAT IS THE NEXT ACTION?
Near-Miss Mast Fell Down but Nobody Injured WHAT IS THE NEXT ACTION?

TESTING THE EAP

The EAP is only as good as you are familiar with it.
Create some role-playing scenarios to practice and respond to a realistic incident.

Did the group assess the situation correctly?
Did they act swiftly and appropriately?
Debrief each scenario and discuss what went well what went wrong.
Is the EAP fit for purpose?

Don't leave your EAP getting dusty in a book on a shelf. Print it off and put it on display!

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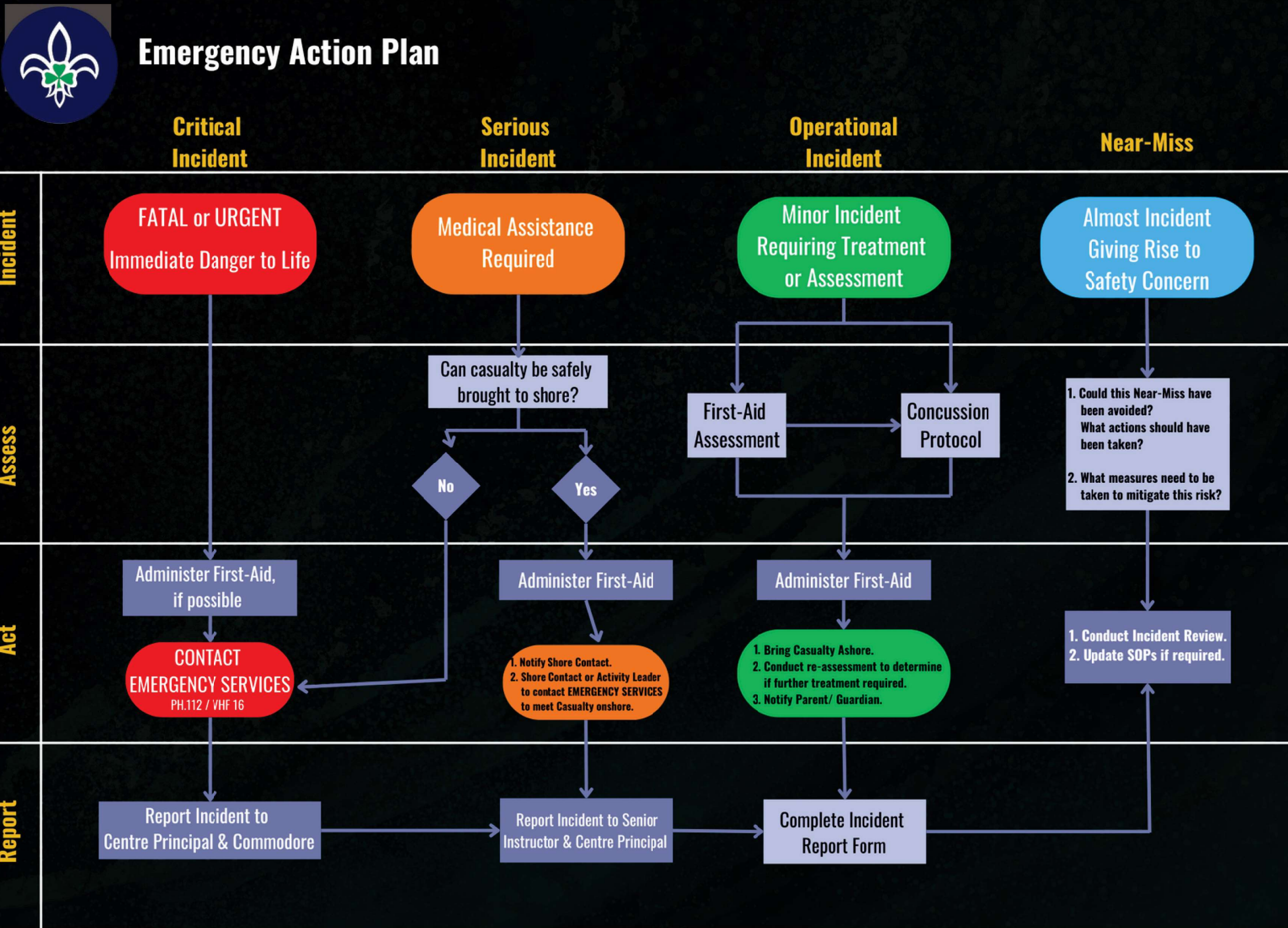
Emergency Action Plan



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Venture Navigators Mate

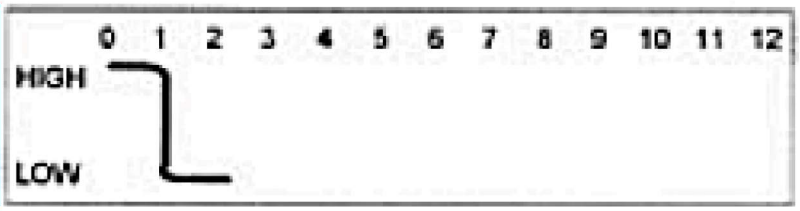
SEAMANSHIP SKILLS
BOSUN WHISTLE CALL

The Boatswains (Bo'sun) whistle has been used for passing orders to sailors onboard ships since at least 1485!

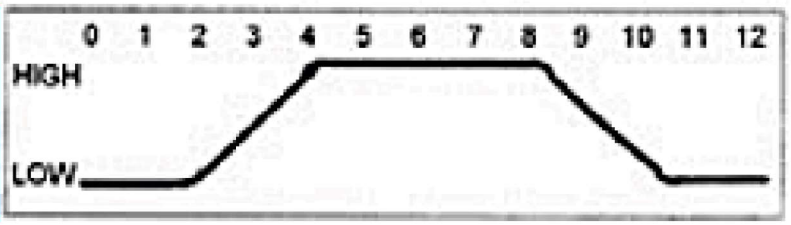
The pitch of the whistle is high and powerful, designed to be heard over the sounds of the sea and attract a sailors attention.

Still
A long, steady note to call attention or silence.

Carry On
A single long note followed by a short note signalling return to work.



Pipe the Side
A ceremonial tune used to welcome or salute senior officers.



Gillingham Sea Scouts Bosun Call tutorial

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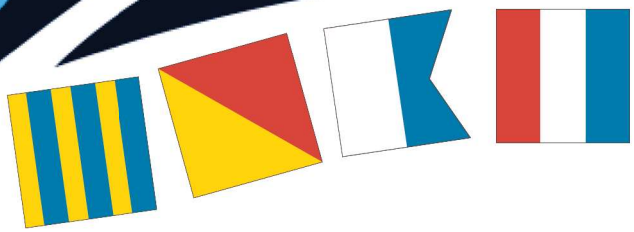


Venture Navigators Mate

SEAMANSHIP SKILLS

PHONETIC ALPHABET

Alpha
Bravo
Charlie
Delta
Echo
Foxtrot
Golf
Hotel
India
Juliet
Kilo
Lima
Mike
November
Oscar
Papa
Quebec
Romeo
Sierra
Tango
Uniform
Victor
Whiskey
X-Ray
Yankee
Zulu

The Phonetic Alphabet is a set of words used to represent each letter of the alphabet. It's used to make communication clear and easy to understand, especially in noisy or difficult conditions, like on a boat or over a radio.

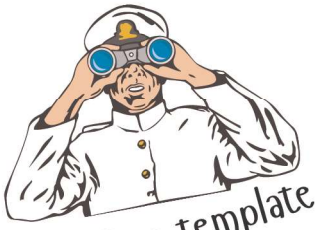
Alpha

Diver Down
Keep Clear

Yankee

I am Dragging
Anchor

The **Phonetic Alphabet** can then be translated to **Nautical Signal Flags**, this is another way ships can communicate to one another.
Each letter is paired with a unique flag and each flag also has its own meaning when flown on its own!



Do you Speak Flag?
Cut and print the signal flag template below...
Split into teams and have each team prepare a 6-letter word.
Take a corner of the room each, display your word and race to complete the translation! Add some binoculars to keep it fun!

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SEAMANSHIP SKILLS

PHONETIC ALPHABET

Venture Navigators Mate

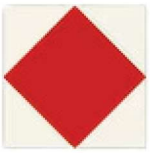

Alpha


Bravo


Charlie

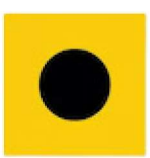

Delta


Echo


Foxtrot

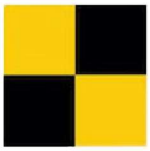

Golf


Hotel


India


Juliet

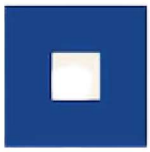

Kilo


Lima


Mike


November


Oscar

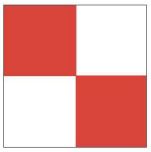

Papa

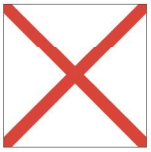

Quebec


Romeo


Sierra


Tango


Uniform


Victor


Whiskey


X-Ray


Yankee


Zulu

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Here's a couple of word exercises to get you warmed up!

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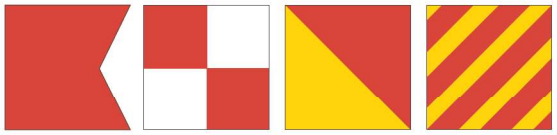
SEAMANSHIP SKILLS

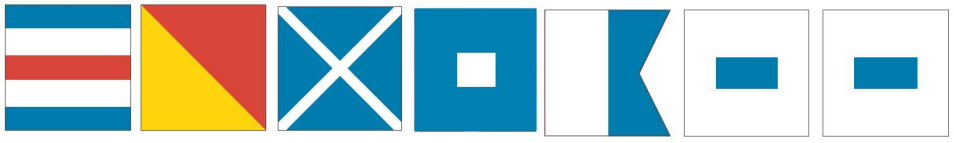
PHONETIC ALPHABET

_____



_____

_____



_____

_____

_____

Make your own nautical signal flag wordsearch!

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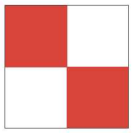
SEAMANSHIP SKILLS

REGATTA SAILING

If your Troop has an affinity for sailing; Signal Flags are used for Race Management across the world and it can be really useful to know whether you're a sailor or supporter!

Preparatory Signal

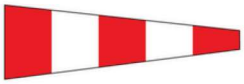
Race Abandoned



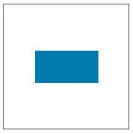
Disqualified if Over Line

Individual recall

General Recall



Postponement



Shortened Course

Rule 30.1 in effect

Rule 30.2 in effect

HEADS UP!

With the templates below (or from images on your phone), split yourself into teams and try a DIY nautical version of the game 'Heads Up!'

- Place a signal flag on your forehead.
- Set the countdown timer and have your team member try guess the rule on your forehead!
- No colour description allowed!

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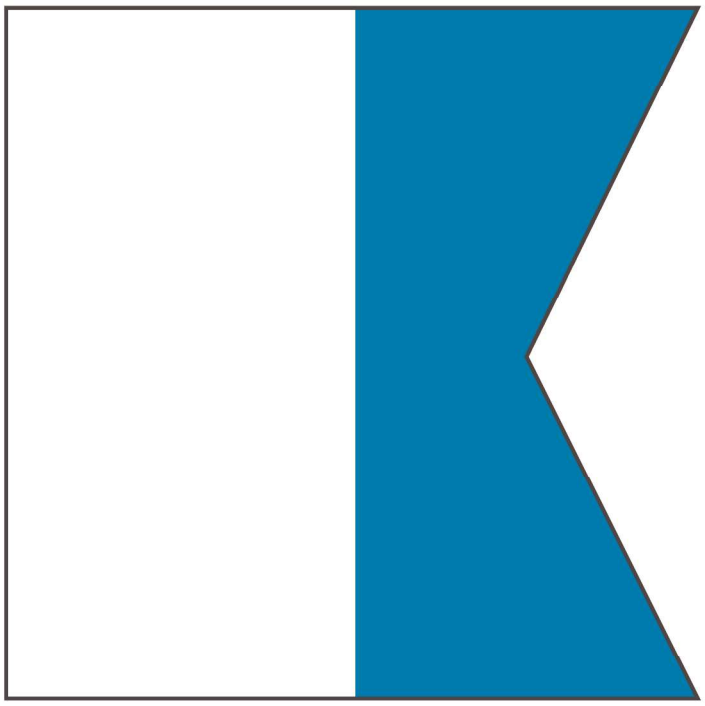

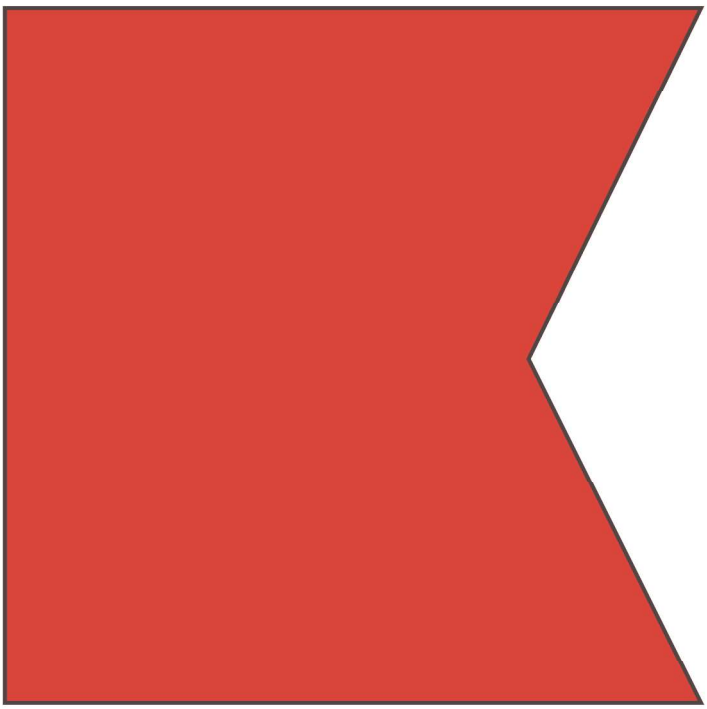

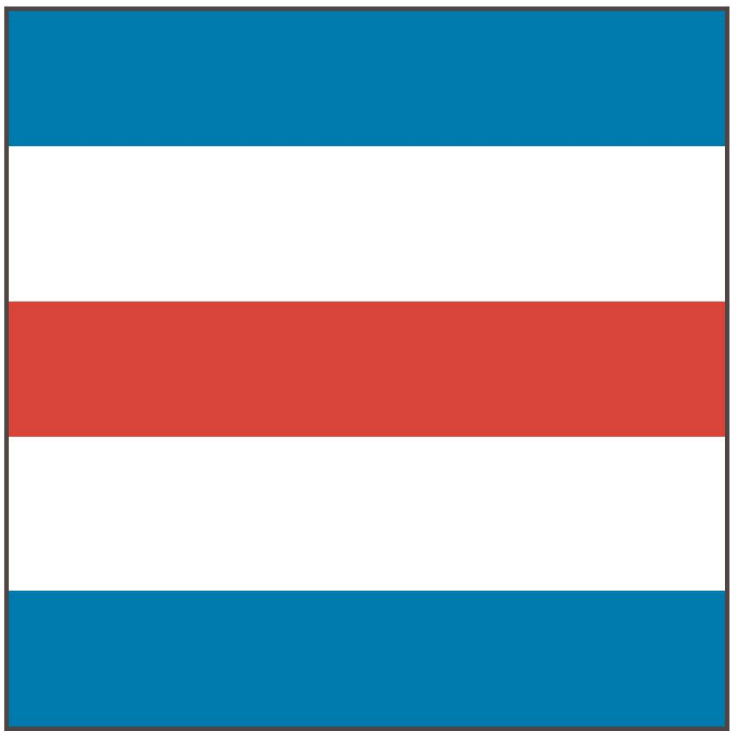

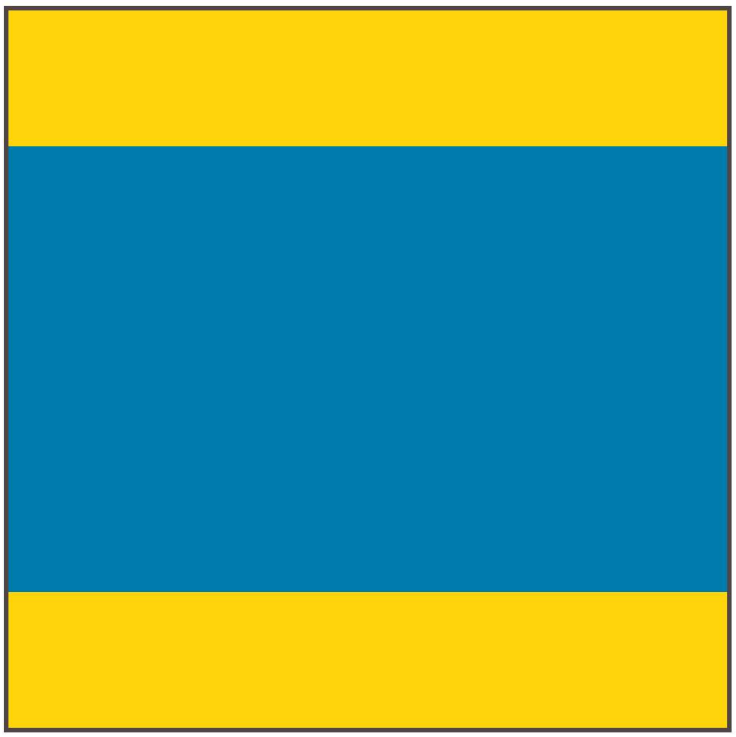

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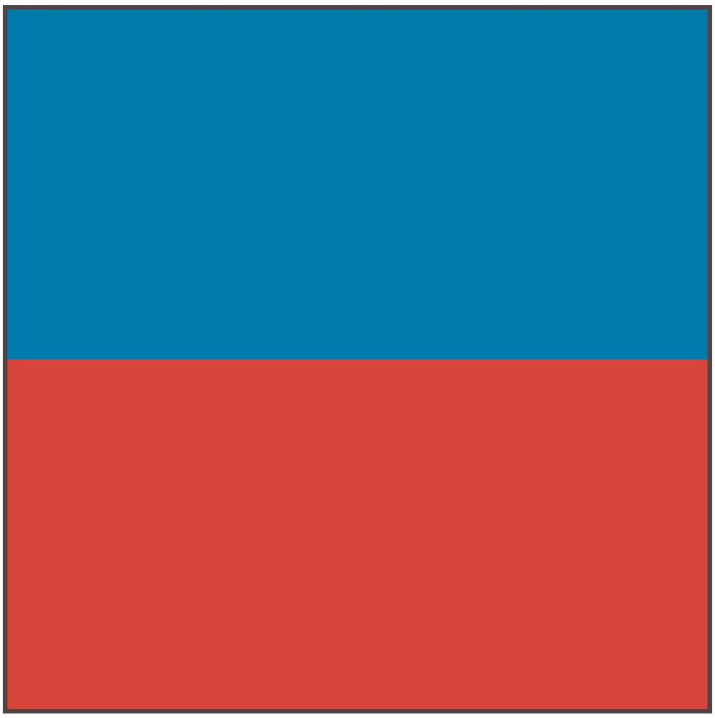

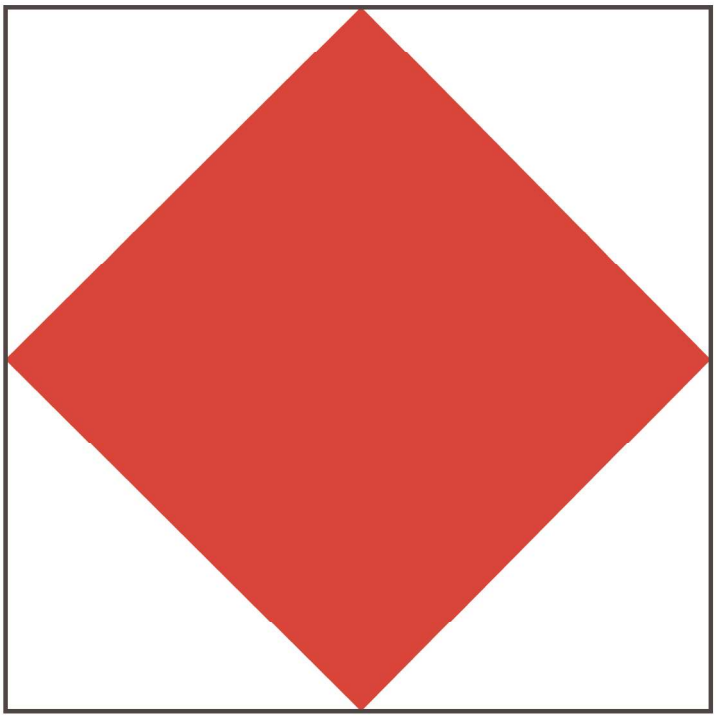

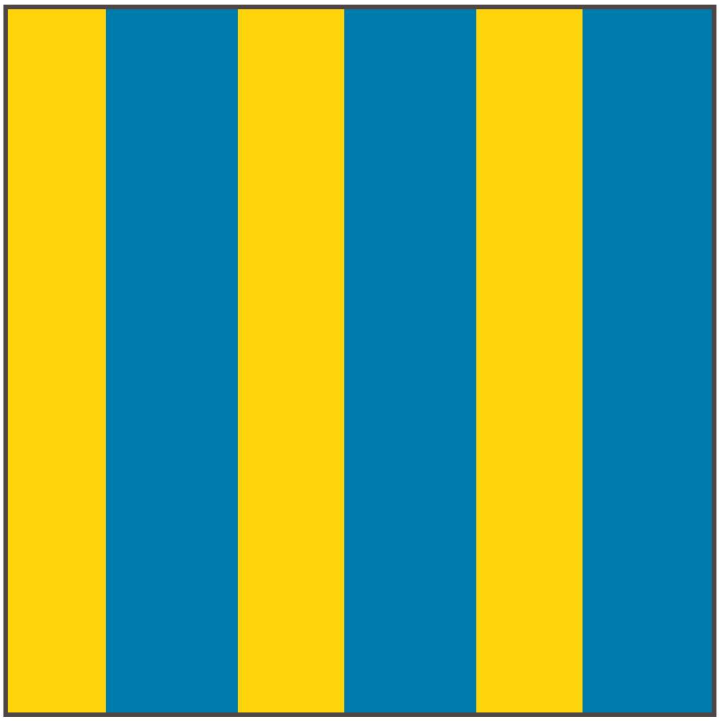

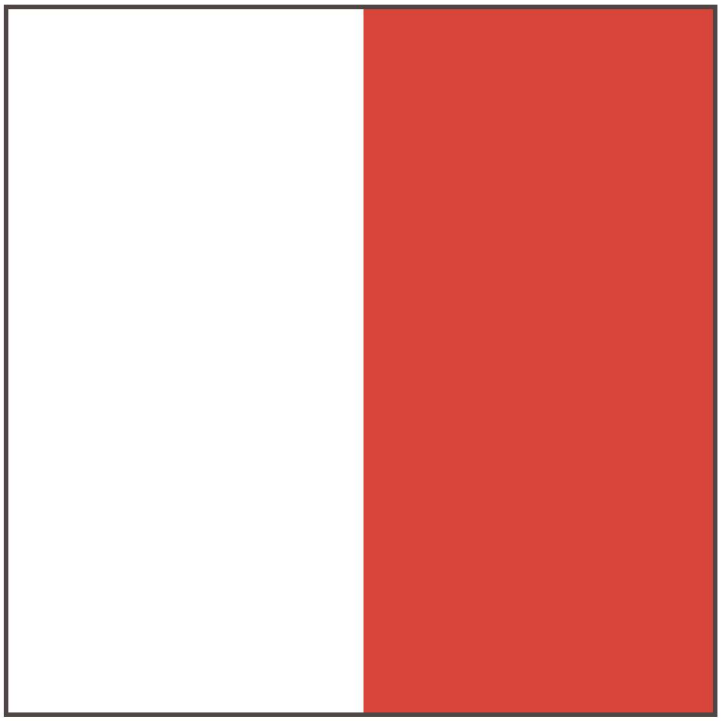

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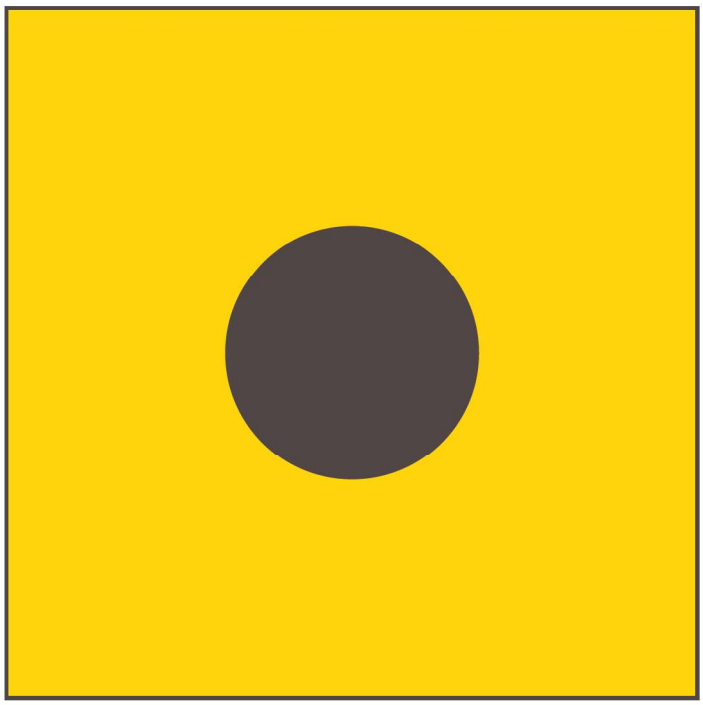

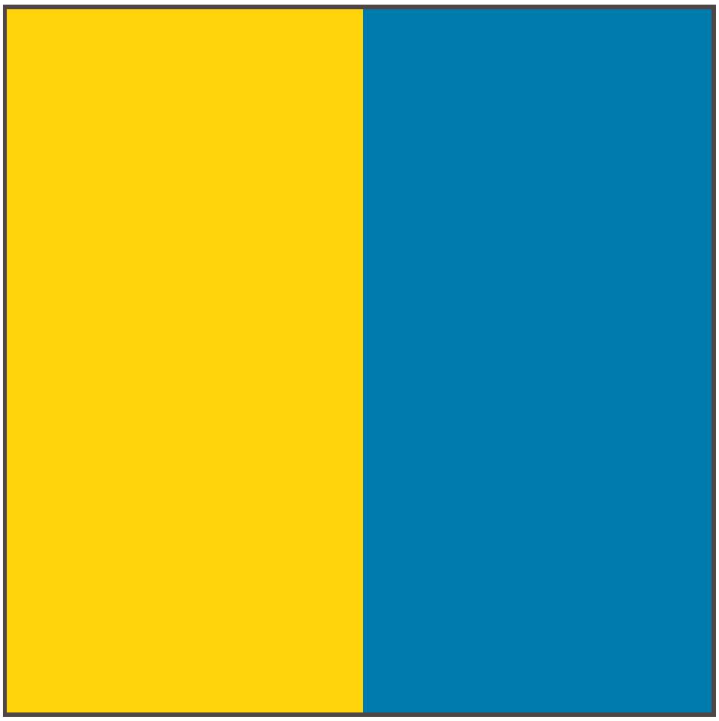

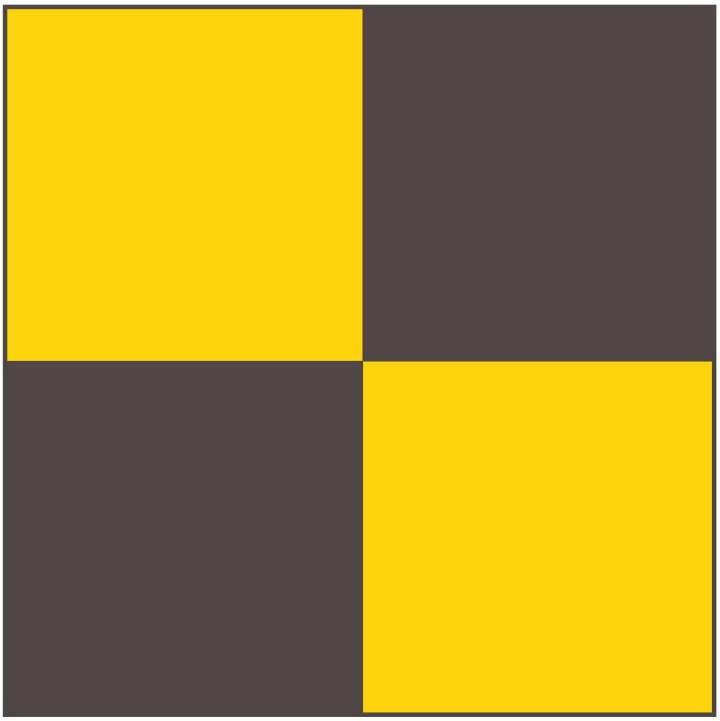

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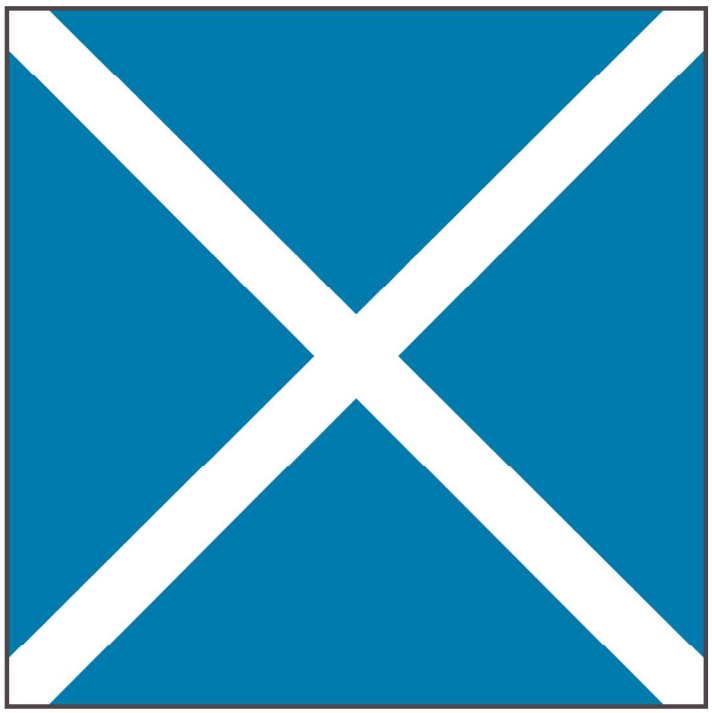

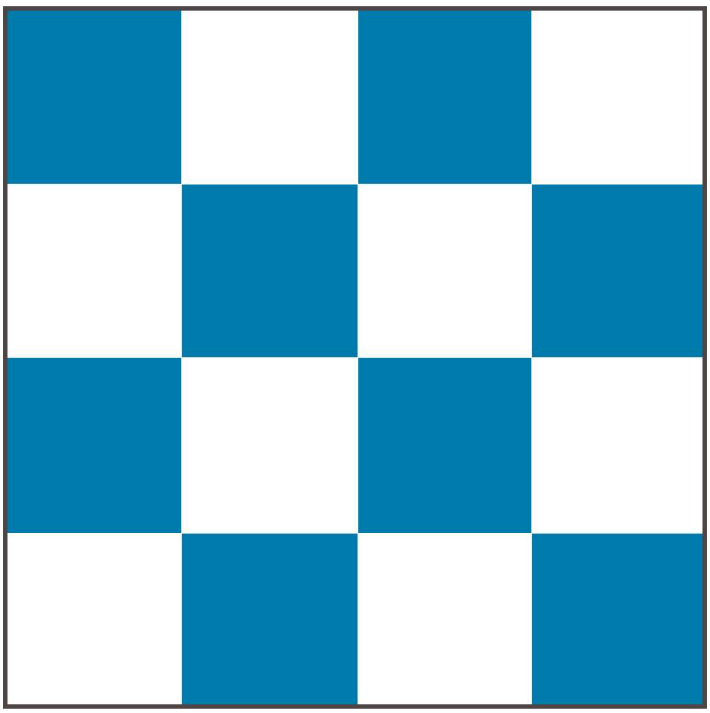

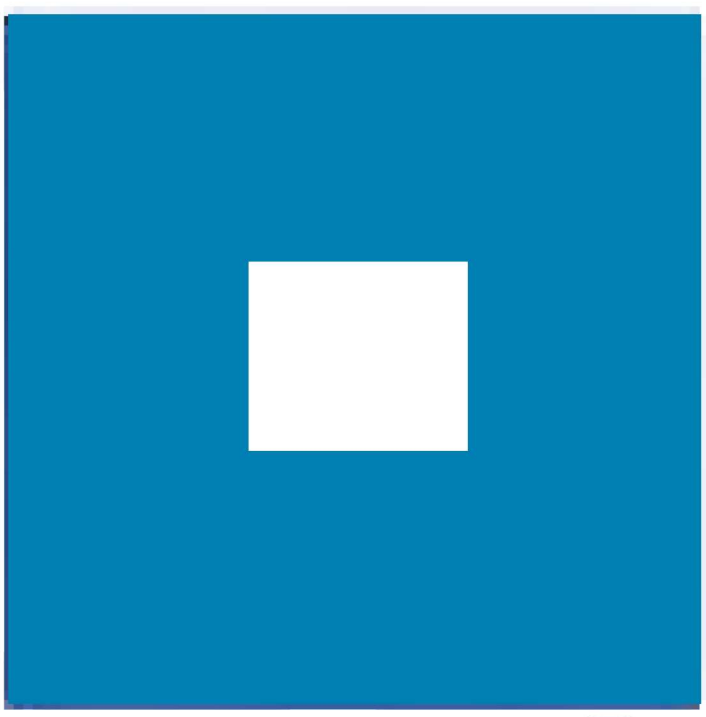

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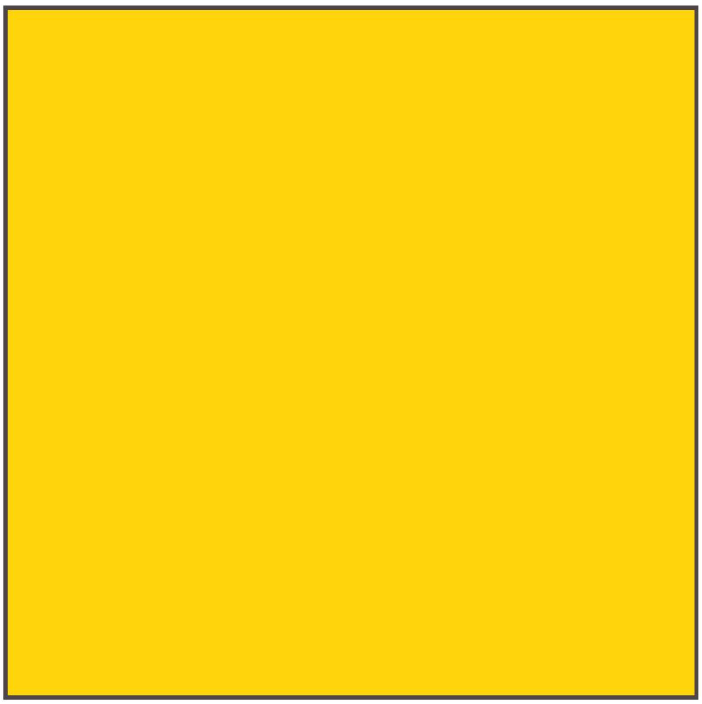

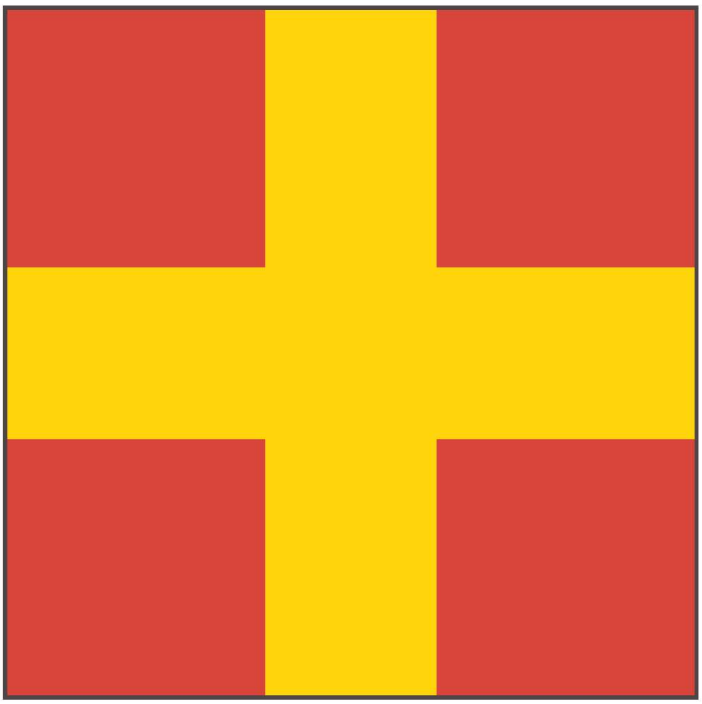

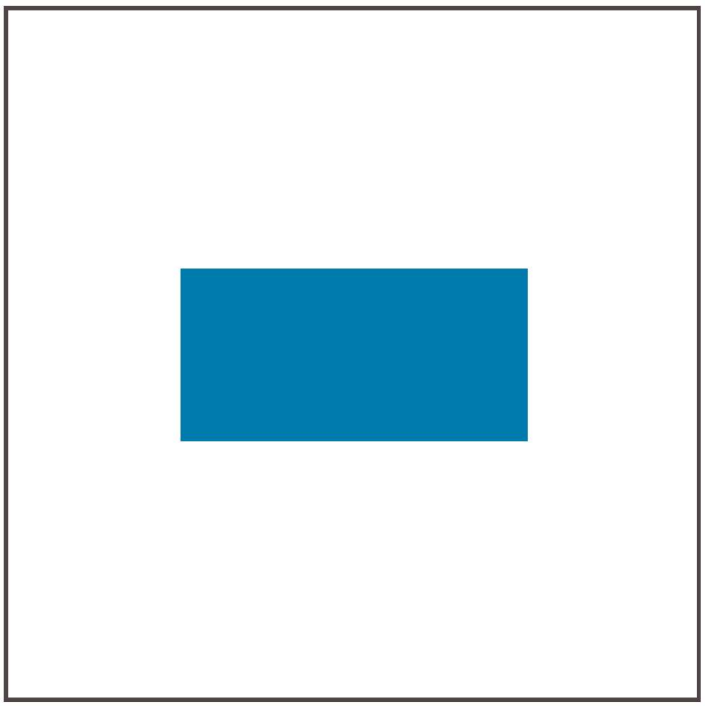

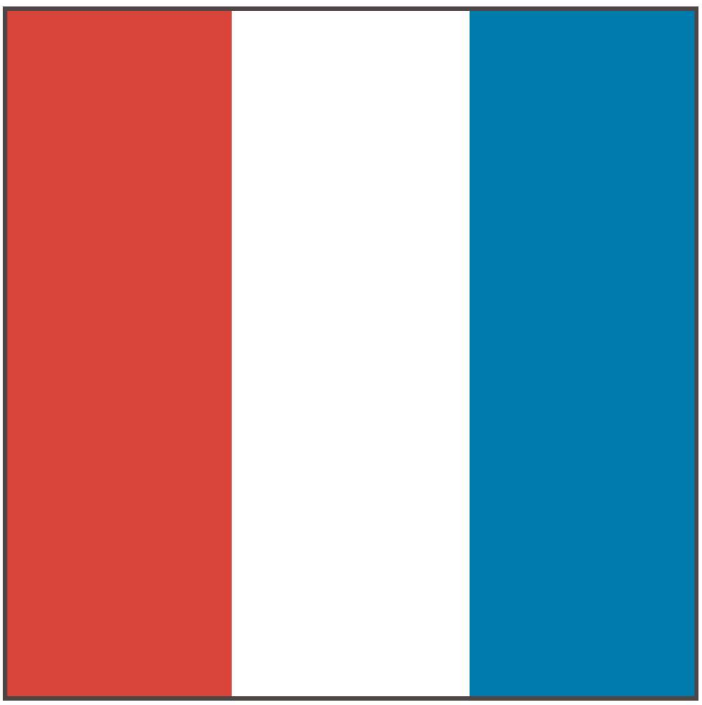

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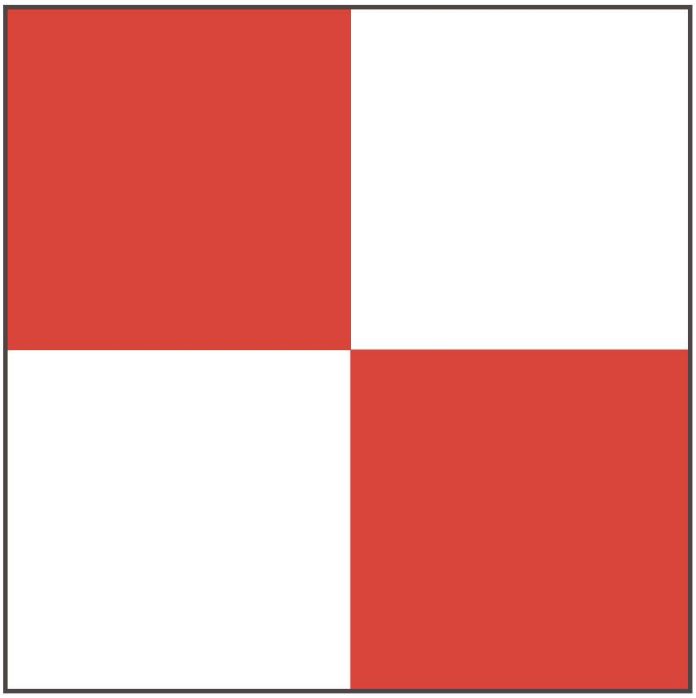

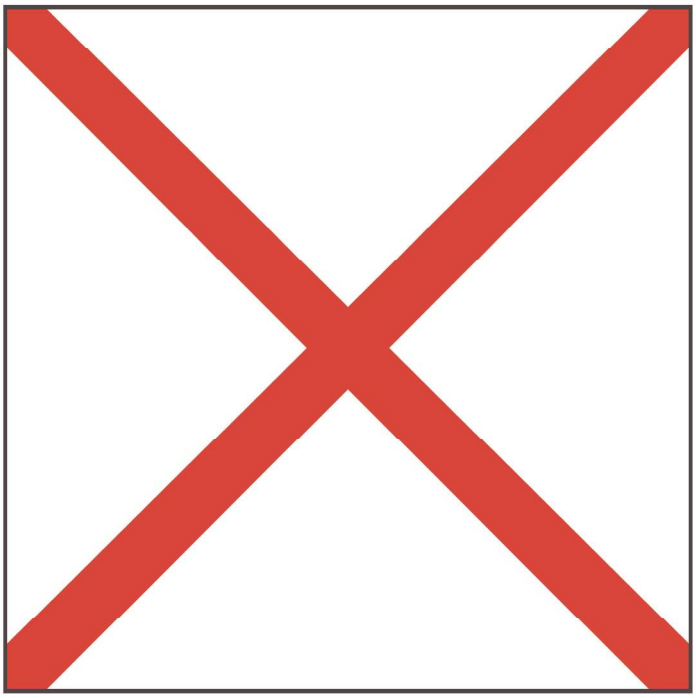

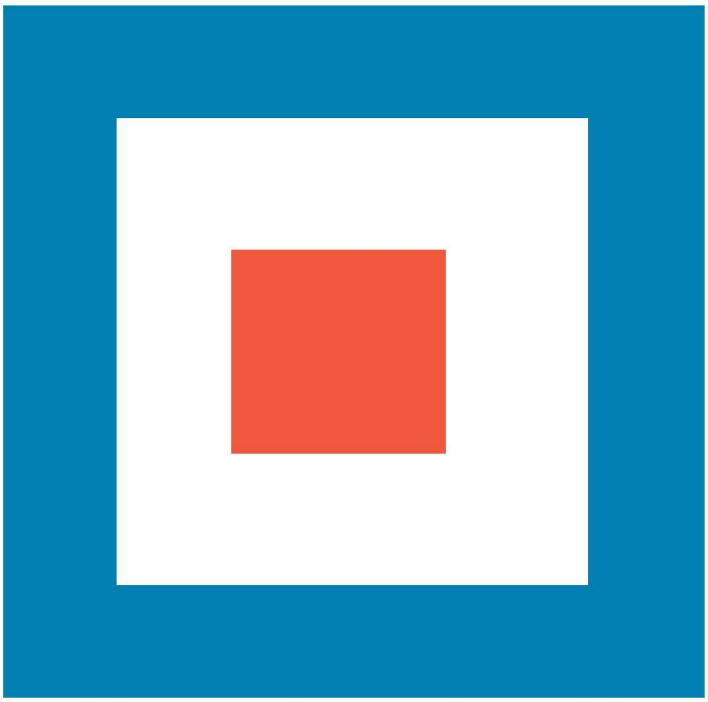

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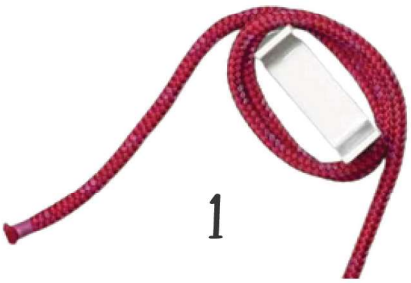
SEAMANSHIP SKILLS

MONKEYS FIST

The monkeys fist knot is a great tool to add weight to the end of a rope for heaving a line.
Getting the hang of successfully tying the monkey fist knot does come with practice and patience!
Go slowly and stay patient!
Initially start with x3 loops. When you are using for 'proper' function, x5 loops work best.



ANIMATED KNOTS™

1. Wrap three turns around your fingers (metal here).
2. Make three more turns around the first loops.
3. Make three more turns between the previous!
4. Tie a knot in the working-end and tuck it into the centre.
5. Spend time now tp tighten every turn!

Be conscious if you want to add weight.
Don't forget someone needs to catch it without injury!

Venture Scouts

ADVENTURES AFLOAT

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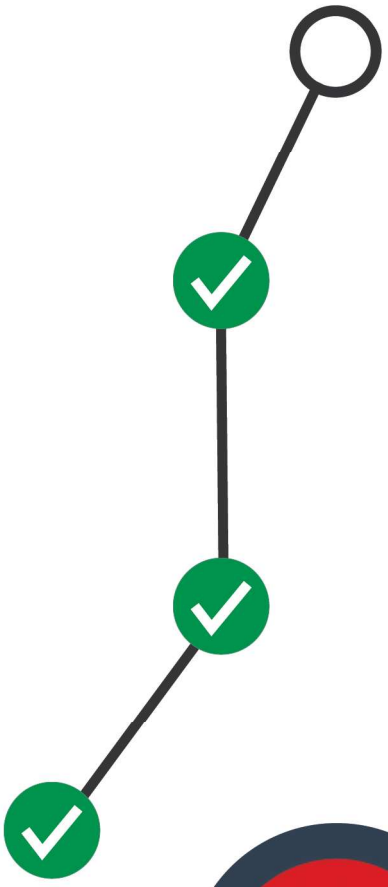
BOATING SKILLS TRAINING

AUDIT YOUR TROOP

We can't just dive into the water; literally or metaphorically!
There are a significant number of changing variables afloat and having the right skills matched with the right experience is key.
A skills audit can help identify the strengths or opportunities for development within the Troop.

It's also great way to learn more about each other, discover talents within the Troop and open doors to new activities.

1. **What skills you are looking for.**
   Specific activity hard-skills are great to identify, but you may decide to cast the net out further and identify what soft-skills your Troop has or needs.
2. **Decide how and who you will collect the data.**
3. **Do the audit.**
   A skills ranking can be useful to identify how strong or how weak the Troop is in an area.
4. **Gather data and discuss.**
   List the troop's collective strengths in each category.
5. **Identify Gaps and Opportunities**
   Look for skills that the crew wants to improve or learn. Discuss ways to develop these skills as a group, such as workshops, guest speakers and training sessions.



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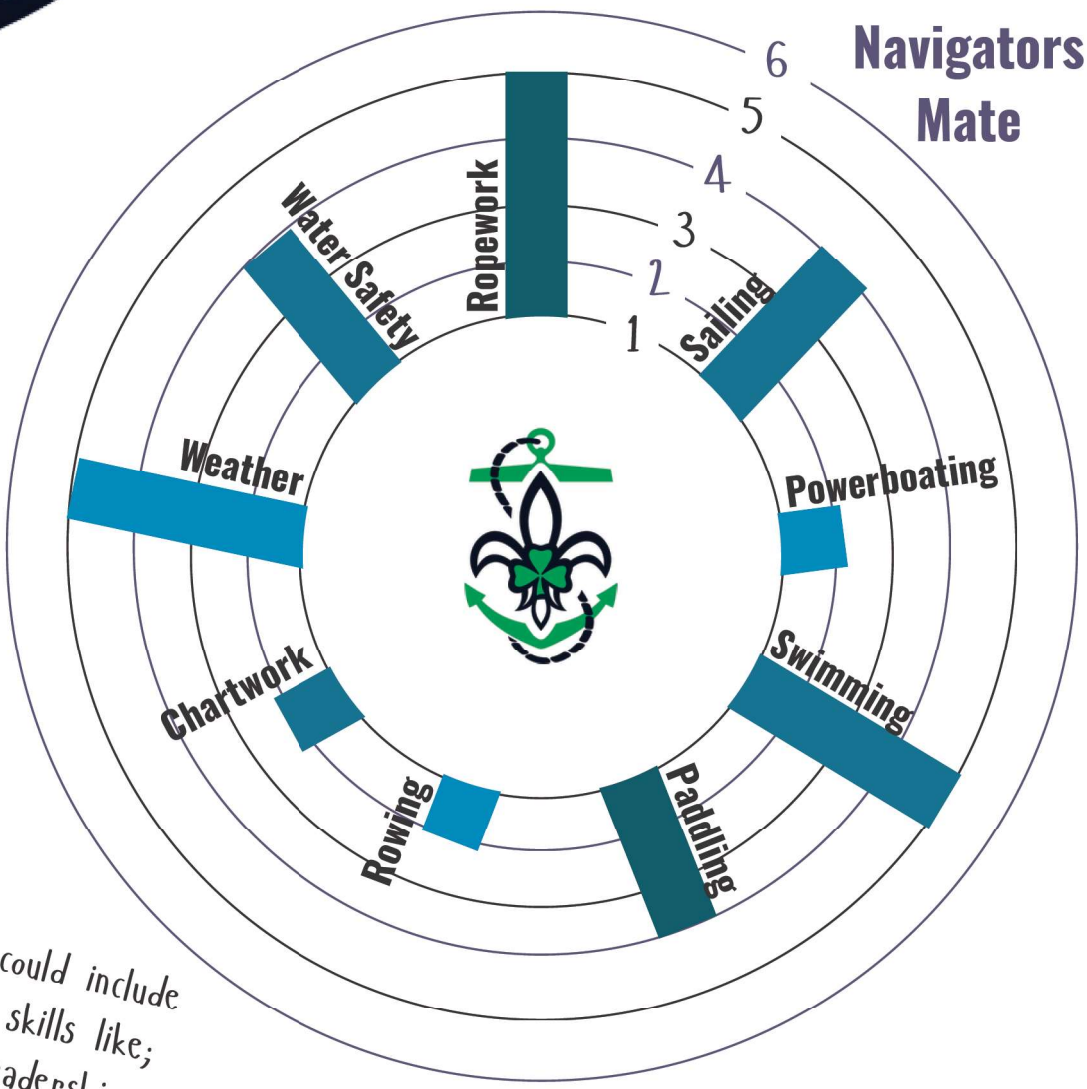
sample circular barplot graph



Identify Skills

For our example, we first identified what skills we wanted to audit.
These skills were selected by going back to our goal; **What skills do we need to go afloat...**

Sailing
Powerboating
Paddling
Rowing
Swimming
Weather
Chartwork
Ropework
Water Safety

You could include other skills like;
- leadership
- project management
- events
- public speaking...

Presenting Data The Wonky-Wheel

This graph is neat because you can strive to get the Troop as rounded as possible in the skills you are seeking.
Bar charts and radar charts are good too.

Collecting Data

We then needed to identify how to quantify and measure the skills we are collecting.
You could use the Adventure Skills but that only almost works. So we agreed on our own progressive competency scale...

0 = No Experience
1 = Observer
2 = Beginner
3 = Progressing
4 = Skilled
5-6 = Confident & Competent

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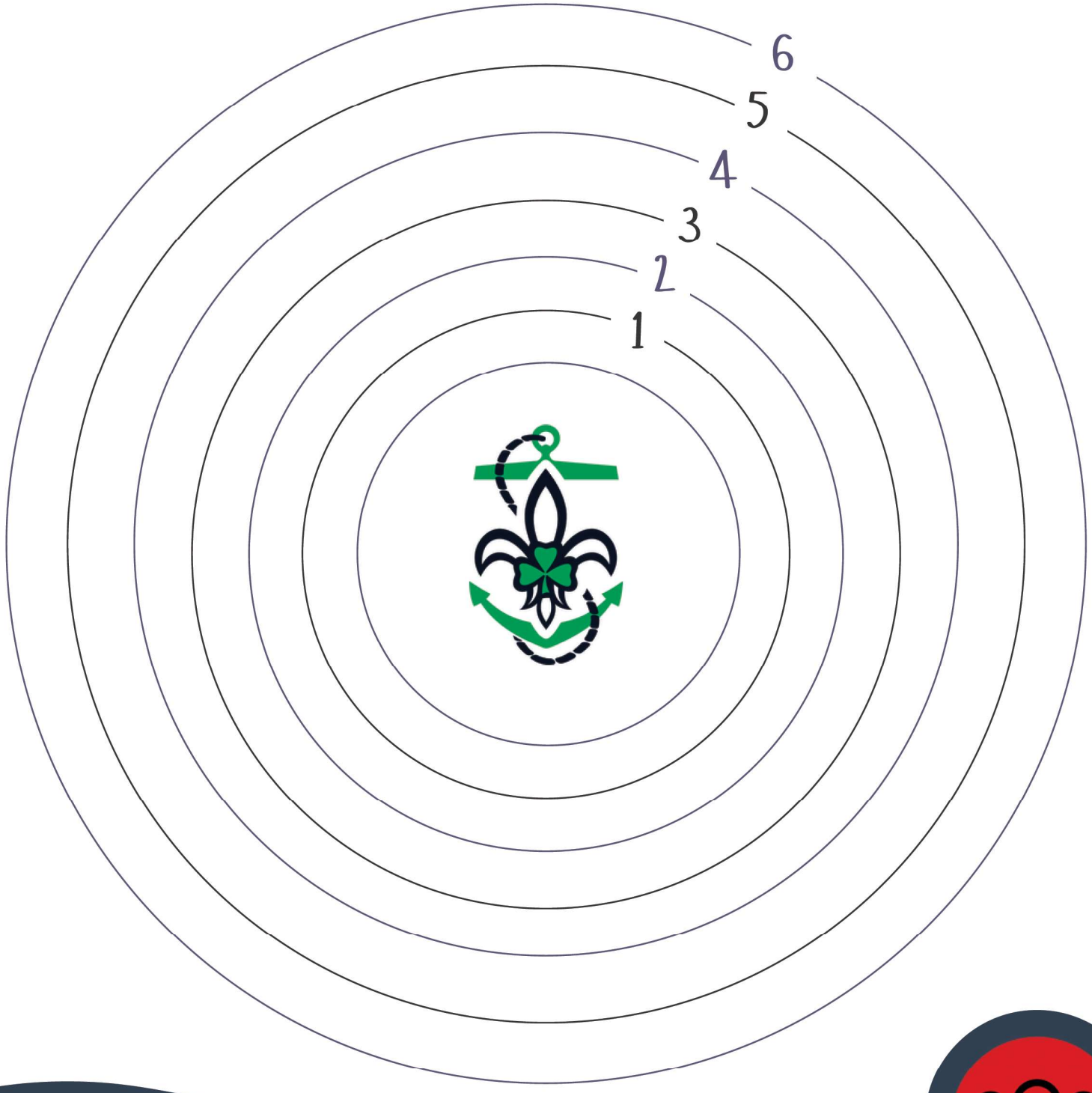
AUDIT YOUR TROOP

BOATING SKILLS TRAINING



Venture Scouts

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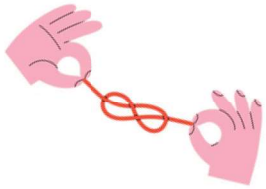

SKILLS TRAINING
INSTRUCTIONAL VIDEO

Videos are a brilliant way to learn skills. They are visual, they are inclusive, they can be a lot of fun to make and some people just learn better this way!

In your Watch/ Patrol or in small groups, discuss and identify what skill you will focus on.
Pick a specific and concise skill.
Consider what age you are pitching to.

- **Create an Introduction**

"Today, we'll learn how to tie a cleat hitch, an essential skill for securing a boat to a dock."

Don't be afraid to make it silly with props or chaos in the background!

- **Break the skill into clear, easy-to-follow steps.**

- **Videography**

Plan visuals for each step.
(close-ups for details, wide shots for context).
A 60-second video on your phone is perfect.
If you need some videography support, send your raw footage to seascouting@scouts.ie and we will pair you with a pro!

You could try anything!

- Set an Anchor
- Heave a Line
- Capsize Recovery
- Tie a Bowline
- Coiling a Line
- Using Spring Lines
- Tacking & Gybing
- Hoisting a Sail
- Parts of a Boat
- Folding a Sail
- Refuelling an Engine

Arklow Beavers teaching us about PFDs!

Irish Sailing video on weather

simple examples...

Send your completed video to us!
@SeaScoutingIRL

VENTURE SCOUTS

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FOUNDATION
BASIC
INTERMEDIATE
ADVANCED
COASTAL
ASSESSOR

Venture Navigators Mate

LEADERSHIP AFLOAT

Leadership Afloat is the certification system used within Scouting Ireland to supervise activities on the water for all members.

Its purpose is to ensure those taking our young people on the water are suitably experienced and competent to do so.

Activity skill alone (I can row this boat) is not encourage safe activities.

1. TECHNICAL ACTIVITY SKILL Adventure Skills

How well I know my activity - I can sail.

2. EXPERIENCE AFLOAT Leadership Logbook

My time afloat and my ability to connect with the Scout Method.

Plan
Do
Review

3. WATER SAFETY

My understanding and effectiveness of employing good practices.

Safety Afloat Toolbox

More on Leadership Afloat

Paddling activities must be supervised by a qualified paddling Instructor.

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ADVENTURES AFLOAT

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ENGINE MAINTENANCE

Using the assumed knowledge that Ventures either have or are working towards their National Powerboat Certificate and have a basic understanding of how a 2-stroke and 4-stroke engine works.

There are notes under the Scout Section re.Outboard Engines if reminders are needed.

Tools for the job
- Gloves
- Small Socket Set
- Filter Wrench

Categorising the engine into manageable maintainable components can help us effectively understand and address the areas we should be looking at for servicing.

1. Fuel System
Fuel, fuel tank, fuel lines, fuel filters, primer bulb, carburettor.

2. Electrical System
Battery, battery terminals, cables, killcord, ignition.

3. Cooling System
Intake, impeller.

4. Engine System
Powerhead, sparkplugs, engine oil.

5. Drive System
Propeller, gearbox.

Servicing should only be done under the supervision of competent persons. This is to protect you and your engine!

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ENGINE MAINTENANCE

FUEL SYSTEM

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This is likely the cause of most outboard engine troubles! We can prevent a lot of engine breakdown time by being conscious here, which will allow us to keep the programme going.

WET FUEL!

Keeping water out of the fuel is the name of the game.
And easier said than done!

Fuel Tank Keeping the tank topped-up after use will reduce air space, reduce condensation and reduce water in the tank. Keep the breather-vent closed when not in use. If you have multiple engines, tag and assign a specific fuel tank to each engine. This can prevent a contaminated tank effecting multiple engines.

Fuel Filter A filter is essential to catch debris but this will also catch water. Check regularly and bleed water as required. If you are getting water in your filter you really need to inspect the fuel tank.
The filter element should be replaced annually.

Secondary Filter This filter will be inside the engine and the last line of defence before fuel getting into the engine components.

Carburettor The heart of the engine where fuel mixes with air before entering the piston chamber. This is where water and debris will collect and clog potentially causing engine issues. Prevention is key.

Fuel Line This obviously connects the whole system together and should regularly be inspected for wear and tear. In particular, seals on connectors do perish and valves in the primer bulb do go.

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ENGINE MAINTENANCE

ELECTRICAL SYSTEM

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A lot of the outboards used for Scouting activity will be a manual pull-starter.
When you start moving towards 20hp+ it is likely you will have a key-start ignition.
The core of the electrical system is the 12v battery.
First and foremost, the battery must be covered, protected and secured to the deck. ⚠
When used regularly, the engine alternator will keep the battery charged. If you intend to lay-up for the winter, it can be a good idea to bring the battery ashore and recharge.

Top-Tip
Grease or vaseline smeared over the battery terminals can keep water and corrosion away.

Electrical connection + salty water is a chaotic mix that creates electrolysis. This will eat away all metal components it comes in contact with.

A multimeter is used to test battery levels.
12.6v+ is fully charged
12.05v is 50%
11.3v is 10%

The sparkplug is what ignites the fuel/ air mix that drives the piston and turns the motor.
The spark is generated from the flywheel spinning and the sparkplug itself should be replaced annually. They only cost a couple of Euro and are a vital component!

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ENGINE MAINTENANCE

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COOLING SYSTEM

The engine is constantly creating mini explosions, so it does get very hot!
Too hot and it can melt components and catch fire.
Obviously, fire mixed with a petrol fuel supply is a recipe...

Outboards are cooled by intaking the water they are operating in
(sea water or freshwater).
They circulate this around the engine within jackets and stream the water out again creating a circulation of cool water keeping the temperatures at bay.

DRIVE SYSTEM

The engine transfers power through the driveshaft to the gearbox which then turns the propeller.

Daily, we should be checking the condition of the propeller. A dented and worn prop will cause engine vibration and damage.
Annually we should replace the gearbox oil.

The key to this is the impeller.
If operating in saltwater, it is important to flush the engine with freshwater as the salty water can cause the impeller to perish.

There should be a tell-tail water stream exiting the engine indicating the cooling system is working and passages are clear. If there is no stream, turn the engine off!!

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ENGINE MAINTENANCE

ENGINE SYSTEM

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If we can maintain the other ancillary systems we are on a good path to keeping a healthy and reliable engine.

The guts of the engine system itself is in the powerhead and will require a lot of dismantling to reach components. Our best options here are to regularly grease and WD40 spray the powerhead. This keeps parts smooth and helps repel water that can seize parts and create corrosion.

TROUBLESHOOTING

Engine Won't Start:

- Check the battery and connections.
- Inspect the fuel system for leaks.
- Check sparkplugs are functional.

Overheating:

- Ensure the water intake isn't blocked.
- Check the impeller for damage.

Loss of Power:

- Inspect the fuel system for blockages.
- Check for damaged propeller blades.

Rough Running:

- Look for water in the fuel, filters or dirty a carburettors.

MAINTENANCE ESSENTIALS

Pre-Start Checks:

- Inspect the fuel, oil, and coolant levels.
- Check the tell-tale water stream.
- Ensure the propeller is free of damage or debris.

Regular Maintenance:

- Replace sparkplugs, engine oil and gear oil and fuel filters annually.
- Flush the engine with freshwater after each saltwater use.

Seasonal Maintenance:

- Inspect, clean and grease all components.
- Replace worn parts like impellers.
- Winterize the engine by draining fluids and fogging the cylinders.

Winterization

Is the process of preparing an engine for long periods of downtime, such as laying-up for the winter months.

- ✔ Run a fuel stabiliser to stop fuel breaking down.
- ✔ Flush engine cooling with freshwater.
- ✔ Spray fogging oil into the piston cylinder.
- ✔ Remove battery.

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POWERBOAT TRAINING

One of the most useful on the water training certificates you can get is the **National Powerboat Certificate**.

Often consider as the 'Drivers License' of powerboating, it teaches boaters how to safely and effectively operate a powerboat in local waters.

While it is a fantastic upskilling opportunity in its own right, it can be an exceptionally useful tool to support your Scout activities on the water.

Recommended Pathway

One-day Introduction to Powerboating Course

Log x9 Hours of supervised driving

Two-day National Powerboat Certificate Course

This course can only be completed at a nationally recognised **Irish Sailing Training Centre**. There are a number of Sea Scouting Groups that have attained this accreditation; something that is attainable and proven hugely beneficial towards developing standards and opportunities afloat.

sailing@scouts.ie

National Powerboat Training Scheme

National Powerboat Certificate

IRISH SAILING

Objective	To develop the skills and knowledge necessary to safely, and effectively, skipper an open powerboat, by day, on inland and coastal waters with which they are familiar.
Previous knowledge / experience	It is assumed that participants hold the Irish Sailing Powerboat Crews Certificate or equivalent experience.
Types of Boat	The course will be conducted in an open powerboat. The type of boat will be marked on the certificates as; • Planing and / or displacement • Fixed drive, Outboard / Outdrive and / or Waterjet. • Tiller and/or console Controls
Duration	Where participants already hold the Irish Sailing Powerboat Crews Certificate or equivalent, the minimum contact time for the course is 14 hours.

Age Considerations

16 Years+ >17 Knots

12-15 Years <17knots

U12 Years <5hp

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MARINE STEWARDSHIP

ECO-AUDIT

An Eco-Audit is a way to check how healthy or environmentally friendly a place is. It's like doing a "health check" for the environment to see what's good, what's bad, and what can be improved.

For us, it involves looking closely at the area to understand its condition, how people and nature interact there and how we can make it better.

Why this matters...

- **Biodiversity** - Healthy shorelines are home to diverse marine life.
- **Pollution Impact** - Litter harms wildlife and microplastics enter the food chain.
- **Climate Buffer** - Shorelines protect against storms and rising sea levels.
- **Community Value** - Clean coasts attract tourism and recreation.

ECO-AUDIT CHECKLIST

Design a checklist and do a health-check on your shore.

1. General Information:

- Date and time of audit.
- Location (GPS or description).
- Weather conditions.

2. Physical Features:

- Length of shoreline inspected.
- Types of habitat (rocky, sandy, muddy, etc.).

3. Marine Life:

- List of observed species (birds, seaweed, crabs).
- Signs of invasive species...

4. Pollution:

- Types of litter found (plastics, fishing gear).
- Photo evidence of waste collected.

5. Human Impact:

- Signs of human activity (fishing, boating, swimming).
- Damage to habitats (trampled areas, infrastructure).

6. Overall Health:

- Rate the shoreline's condition; make your own scale. (clean, moderate pollution, heavily polluted).
- Notes for improvement.

Based on what you find, think about ways to improve the area, like organising cleanups or educating others.

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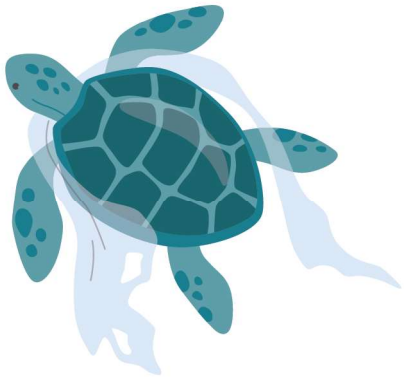
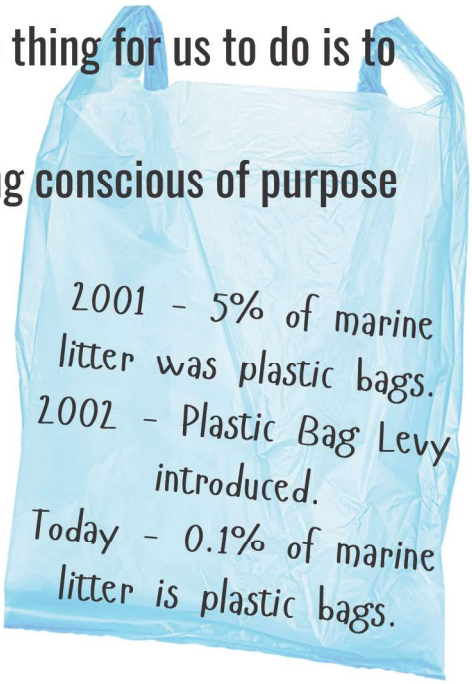


MARINE STEWARDSHIP
CLEAN-UP & MONITORING

Following on from your shoreside Eco-Audit, the next sensible thing for us to do is to create positive actions.
Putting that extra 10% of energy into a beach clean and being conscious of purpose and data collected can make the difference...



Survey the Litter Found:
- This can help identify common and reoffending items.
- Sensible campaigns for change can be supported.

Analyse Waste Patterns:
- Revisit the cleaned area to observe how much and what type of waste has returned.
- Categorise the new waste and note any patterns. (eg. fishing gear, food packaging).

Tidal and Weather Influence:
- Observe the area during different tidal phases.
- Note how tides bring in or take away waste.
- Identify areas where waste accumulates the most.

1. Choose Survey Area (100m).
2. Complete Risk Assessment.
3. Take photos & Collect all debris.
4. Record weather conditions.
5. Record all debris.
6. Revisit a week later (x4 weeks).
7. Compare Findings.
8. Compile Recommendations.

For greater impact, continue monitoring your shoreside monthly or quarterly.

Here is a sample methodology and litter collection list.

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Invasives.ie
Invasive Alien Species in Ireland

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MARINE STEWARDSHIP
INVASIVE SPECIES

Invasive marine species are plants, animals or organisms that aren't native to our waters and can create significant harm and impact to our ecosystems:

- **Hurt Local Wildlife** - They compete with native species for food and space, sometimes even eating them!
- **Damaging Ecosystems** - They can disrupt delicate marine habitats, like rocky shores or seagrass beds.
- **Economic Impact** - Some invasive species harm fishing, aquaculture or tourism industries by damaging equipment or reducing fish stocks.

Marine invasive species are primarily caused by human activities, either accidentally or intentionally...

Hull Fouling
Ballast Water
Aquaculture
Marine Litter

What's on your bottom?

CHECK **Check** your equipment, boat, and clothing after leaving the water for mud, animals, or plant material.

CLEAN **Clean** everything thoroughly paying attention to areas that are damp and hard to inspect.

DRY **Dry** everything; some invasive plants and animals can survive for weeks in damp conditions.

Disinfect if drying is not possible

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MARINE INVASIVE SPECIES

STOP THE SPREAD OF INVASIVE PLANTS AND ANIMALS
CHECK CLEAN DRY
invasives.ie/biosecurity

We spend significant time on the water and on the shore.
Our observations can help protect Ireland's beautiful marine life.
Report Sightings if you spot something unusual, take a photo and note where you saw it.

Your can submit sightings online or by app.
Biodiversity Data Capture App.

Invasives.ie
Invasive Alien Species in Ireland
Actions on Invasives

Japanese Wireweed
Native to: Japan
First Irish Report:
1995, now widespread.

Thin brown seaweed that can grow 10cm a day, reducing levels of light penetration to the seafloor and can form large mats on the surface impeding boaters and swimmers.

Zebra Mussel
Native to: the Black Sea
First Irish Report:
1994, freshwater widespread.

Decline of native mussel species as zebra mussels can colonise their shells and habitat. Can cause serious problems blocking water pipes with removal costly.

Carpet Sea Squirt
Native to: Indo-Pacific
First Irish Report:
2005; Dublin, Mayo, Galway, Down.

Pale orange colour in thin flexible sheets threatening aquaculture.

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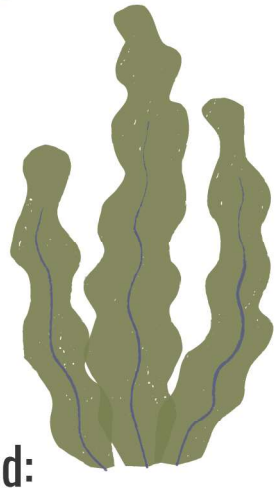


INVASIVE SPECIES

TAKE ACTION

To carry out an invasive species inspection you will need:

- Field guides or ID sheets for Irish marine invasive species.
- Clipboard, pen, and inspection checklist.
- Smartphone or camera for photos.
- GPS or map (optional, for marking specific locations).

1. **Prepare** for your survey by familiarise yourself with invasive species and their likely habitats to help your search be effective; rockpools, marina pontoons, beach heads, boat hulls.

2. **Conduct** your survey, break into teams an search specific section of beach/ marina.

3. **Record** observations by noting location, description, size and photo of any suspects.

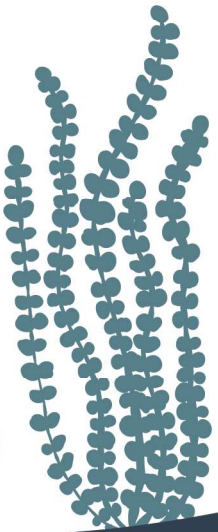
If you need to examine a suspect, use gloves and avoid disturbing or removing it from its habitat.

4. **Discuss and Report** any findings or unknown species just to be sure.

Follow Up

If you had a clean survey; promote and share the Check-Clean-Dry to remind Scouts the importance of washing gear.

If your survey was suspicious; engage with stakeholders and the community to create awareness, impact and action to reduce the spread of 'infection'.



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CREWMATES

INCLUSION AFLOAT

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What is Inclusion??

The typical answer to this is often a picture of someone in a wheelchair; but it is so much more than this.

Inclusion means making everyone welcome, valued and able to participate. It's about creating an environment where differences don't divide.

Inclusion Afloat is one of the core features of the Scouting Ireland SAILS Framework

Spirituality

Intellectual Disability

Girls

International

Boys

Refugees

Neurodivergent

Sensory Impairment

LGBTQ+

Physical Disability

GOING AFLOAT

- **Assess Needs** Talk to your participants, what are they comfortable doing? Understand their needs.
- **Adapt the Environment** Adjust the difficulty of tasks, consider access/ exit points, use the Buddy System, consider the stability and use of appropriate boats.
- **Create a Positive Experience** Adjust the difficulty of tasks, encourage helpers, it doesn't need to be competitive; an opportunity to steer a boat may be enough.

VENTURE SCOUTS

ADVENTURES AFLOAT

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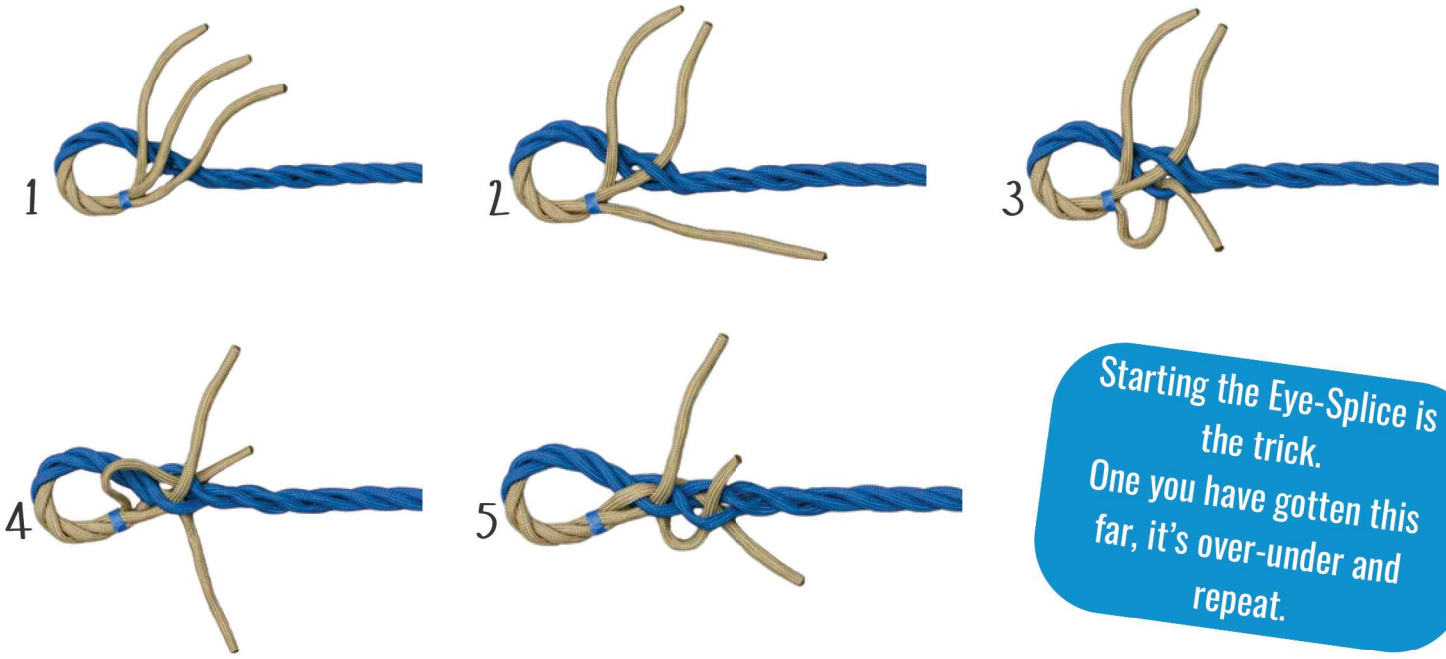
ROPEWORK ESSENTIALS

EYE-SPLICE

An eye-splice is a strong, permanent loop formed at the end of a rope. It's created by weaving the strands of the rope back into itself and very useful in all shapes of boating-life including for moorings, dock lines, halyards, fenders and more.



Starting the Eye-Splice is the trick.
One you have gotten this far, it's over-under and repeat.

Electrical tape will help keep your strands intact!

A fid can be a helpful tool for splicing

Thimbles are plastic or metal and are permanently secured reinforcement protecting the rope from chafe. Ensure you use the correct size.

ANIMATED KNOTS

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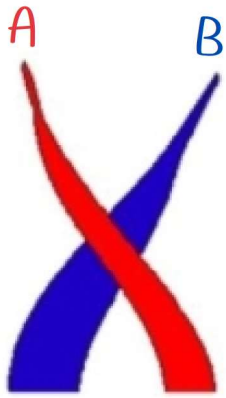
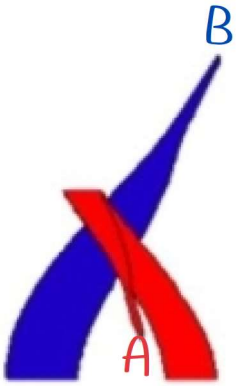
ROPEWORK ESSENTIALS

NECKERCHIEF FRIENDSHIP KNOT

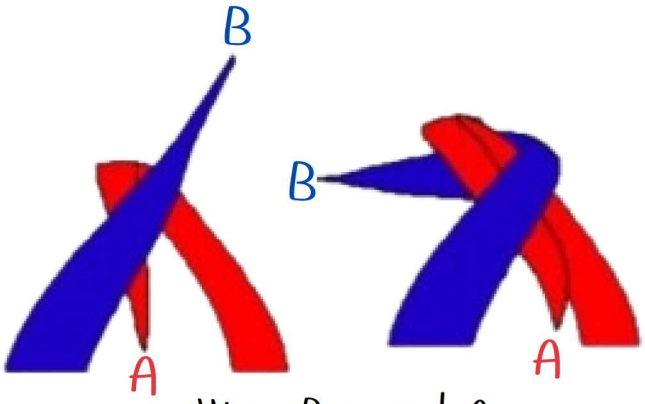
Ensure your neckerchief is tidy and well rolled for best results!



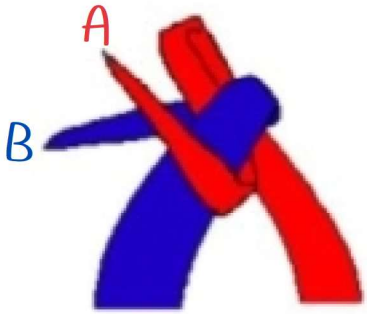
Cross A over B



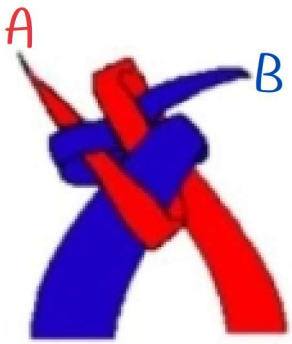
Fold A back on itself.



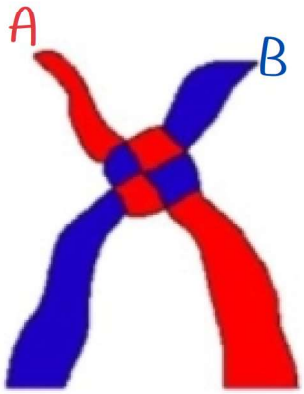
Wrap B around A.



Bring the tail end of A over B.



Wrap the tail of B over the end of A and under it



Tug all four ends to secure!

Sometimes you just can't beat a video!

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