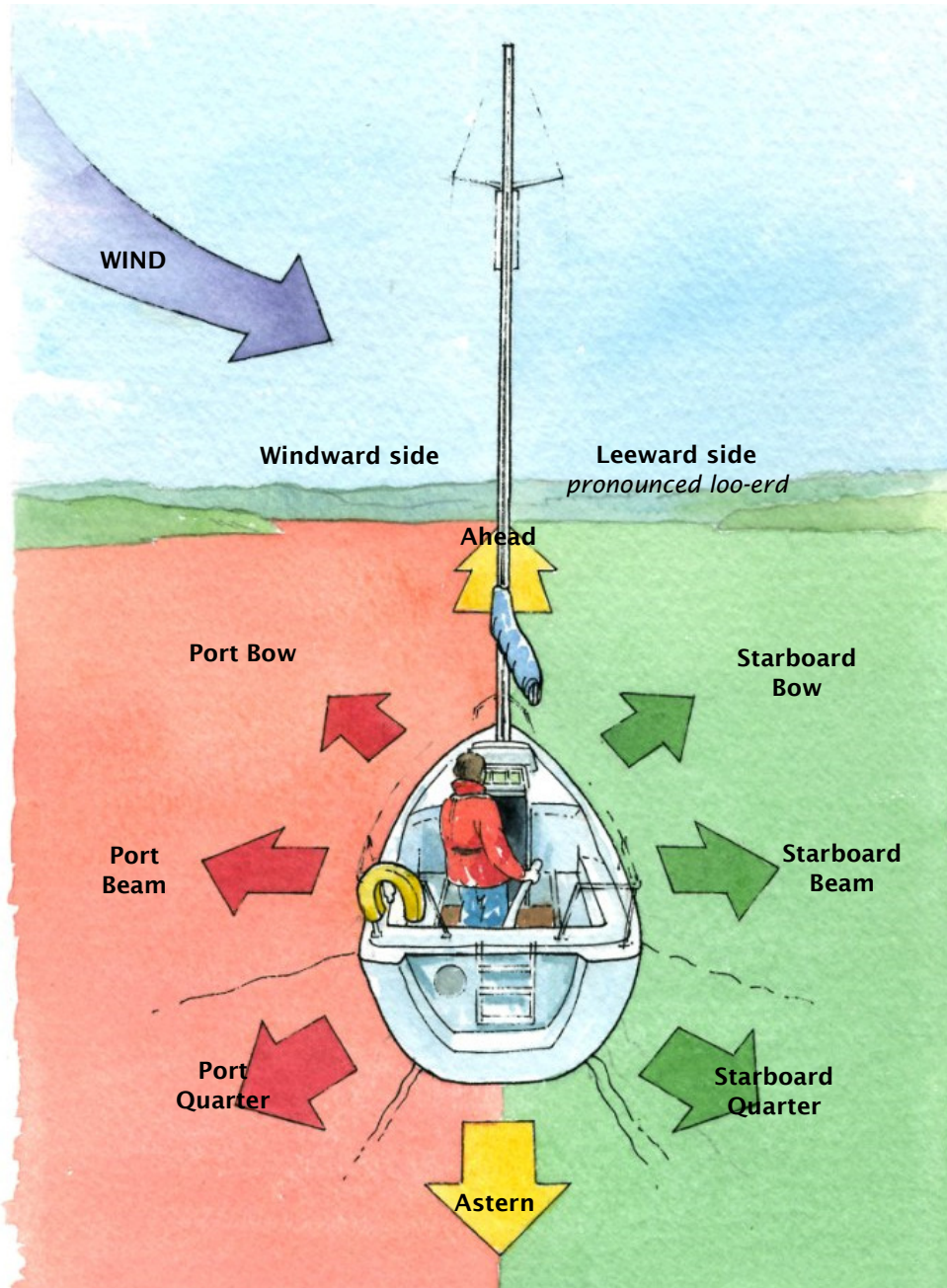


Thank you for booking your Basic Skills Level 2 course with Endeavour Sailing

The following literature has been designed to help you learn some of the terms that you are going to hear during your course. Please do not worry though if you cannot remember it all as you will be taught these terms and many more during your time with us.

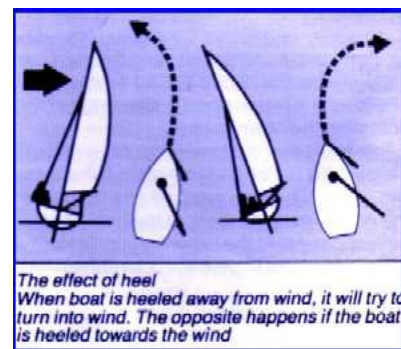


Four Essentials of Sailing

When sailing there are four basic points you need to be constantly aware of. These are listed below. While you are sailing you should be continuously checking that all four are correctly adjusted for your current sailing direction relative to that of the wind.

1. Balance - side to side balance

Keeping the boat, starboard and port, level i.e. not letting it tip. This means leaning out (hiking) in a gust and keeping in when the wind dies (and while on a run). If you are leaning out as far as possible and the boat keeps tipping up, this is the time to let out a bit of mainsheet to 'spill' wind. If you want to go as fast as possible when the wind increases in strength you should throw your weight out as far as possible (using the toe straps if applicable) and then use the mainsheet to trim the boat to keep it level. Remember a sailing vessel should be sailed flat, not heeling over, even though it is fun

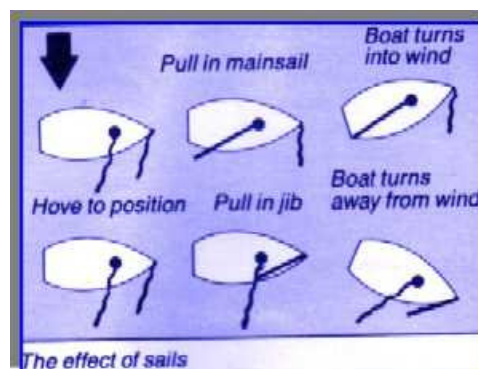


2. Boat Trim - fore and aft boat pitch

Keeping the boat, fore and aft, level. With some smaller dinghies (and this definitely includes the topper) you have to sit in different positions depending on the point of sail (sit forward on a beat, in the middle on a reach and at the stern on a run). The point of doing this is to prevent the boat dragging in the water. If the stern of the boat is low in the water and the bow is high then there is a lot of drag. If the bow is low and the stern is high there is less drag but it is very unstable at high speed. When the wind blows from behind it tends to push the front of the boat down and so it is necessary to sit well back (especially in strong winds) to stop the bow from submerging in the waves.

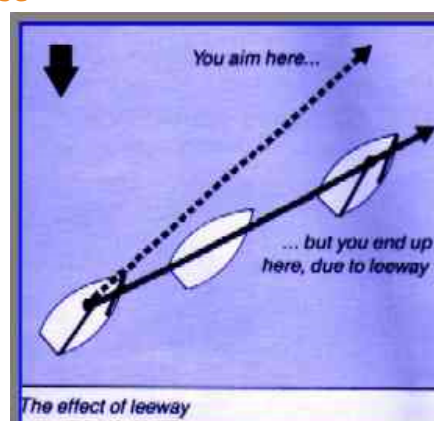
3. Sail Setting - setting of sails relative to the wind

Use the mainsheet to keep the sail in the most efficient position. It should not be flapping (too loose) "a flappy sail is an unhappy sail" and it should not be 'over sheeted' (too tight) "if in doubt let it out". If you let the mainsheet out slowly, the first part of the sail to start flapping is the luff. If the luff is flapping then pull the mainsheet back in until it just stops flapping (and no further). This gives you the best position for the sail and a trim sail. Whilst you are sailing you should be continuously adjusting the mainsheet to be sure that it is not 'over sheeted' i.e. let it out a bit until the luff just begins to flap and then pull it back until it stops. If you are sailing on a beat then continuously adjust but in a different way - you keep the mainsheet tightly in and adjust by turning the boat closer to the wind until the luff begins to flap and then turning back until it stops.

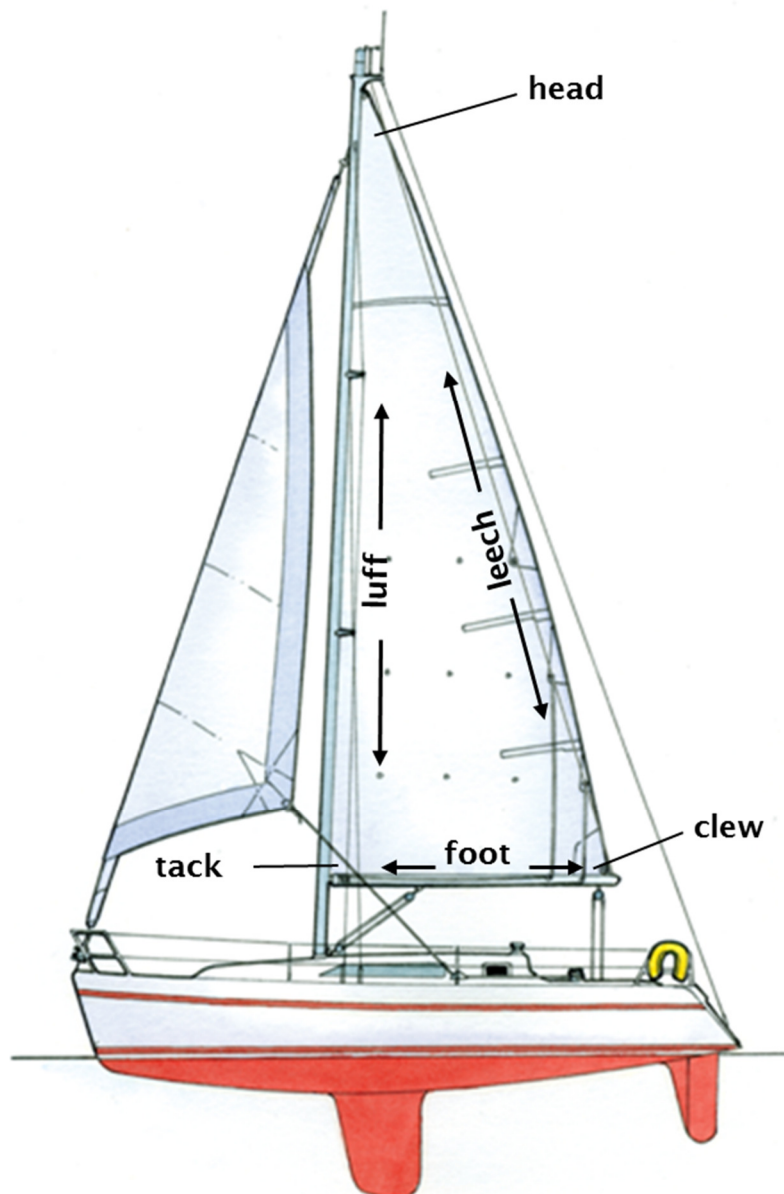


4. Course Made Good - choosing the most appropriate course

If you are sailing between 2 points, A and B, you might not want to sail to point C first. Aim to sail boat smoothly in a steady direction to take the shortest route between two points. You may also need to compensate for other factors that could affect your course e.g. tide and leeway (wind). If the tide is sweeping you sideways as you try to sail between points A and B and you simply point your boat directly at B whilst you sail, you will end up sailing in a curve. If however, you point a little up into the direction of the tide you will actually sail straight for point B. One way to check on your actual direction is to take transits. If there is a buoy at point B you may be able to line it up with something beyond (a tree on the shore or something). If this is so then as long as the buoy stays in line with the tree as you sail towards it, your course is correct. If it does not then either tide or leeway is affecting your course and you should make corrections to it.



Parts of a sail



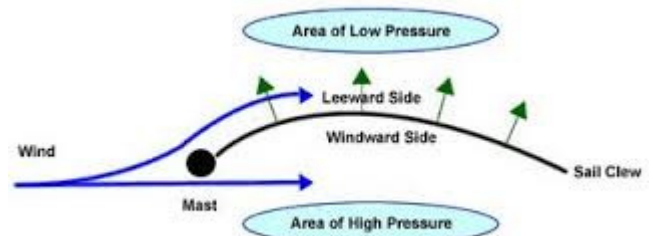
How Sails work

Sails are not flat, they are cut to give a shallow dish shape, with a concave inside surface and a convex outside surface. The air flows across these surfaces.

The air flow on this side of the sail is faster therefore reducing the pressure

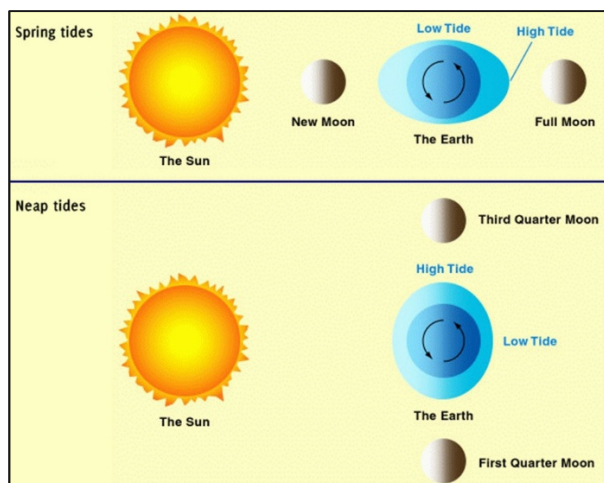
The air flow on this side of the sail is slower therefore increasing the pressure

This difference in air pressure causes the sail be pulled to the faster flow on the outside and this creates LIFT which powers the boat. The art of sail trim is to make the sails work to their optimum – giving us the best speed.



Tides

Tides have two components:



1. **Tidal streams** – the horizontal movement of the water
2. **Tidal heights** – the vertical movement of the water

When the tide falls or flows out this is called the **ebb**.

When the tide rises or flows in this is called the **flow**

When the tide movement is at its greatest we have a **spring tide**. This occurs when we have a new moon or a full moon. This happens because the sun, moon and earth are in alignment causing a strong navigational pull between them.

When the tide movement is at its smallest we have a **neap tide**. This is when we have a quarter moon. At this point the sun, moon and earth are not in direct alignment therefore producing a weaker gravitational pull.

Tidal Heights

Tidal height information is found in tide tables.

As you can see it tells the times of High Water and the height of High Water and the time and height of Low water, so in this example High water in Dover on the 2nd October is at 0722 (universal time) and the height of tide at high water is 5.4 meters.

TIME ZONE (UTC)			ENGLAND – DOVER		
For Summer Time add ONE hour in non-shaded areas			LAT 51°07'N LONG 1°19'W		
TIMES AND HEIGHTS OF HIGH AND LOW WATERS					
SEPTEMBER	OCTOBER	NOVEMBER	SEPTEMBER	OCTOBER	NOVEMBER
Time m	Time m	Time m	Time m	Time m	Time m
1 0424 6.2	16 0059 2.4	1 0230 2.1	1 0601 5.1	16 0209 2.5	1 0230 2.1
1139 2.4	0637 5.3	0753 5.9	1236 2.5	0741 5.4	0753 5.9
SU 1719 5.2	M 1343 2.4	F 1457 1.6	TU 1842 5.2	W 1501 2.1	SA 1604 1.6
	1935 5.3	2025 6.1		2042 5.5	2123 5.9
2 0028 2.4	17 0229 2.3	2 0331 1.6	2 0143 2.5	17 0330 2.1	2 0331 1.6
0633 5.1	0810 5.4	0845 5.8	0722 5.4	0846 5.8	0845 5.8
M 1319 2.5	TU 1522 2.1	SA 1556 1.2	W 1420 2.2	TH 1606 1.7	SU 1644 1.4
1901 5.3	2103 5.6	2114 6.5	1953 5.6	2129 5.9	2155 6.1
3 0214 2.3	0401 2.0	3 0426 1.2	3 0301 2.0	0425 1.8	3 0426 1.2
0747 5.3	0914 5.8	0931 6.8	0823 5.8	0930 6.1	0931 6.8
TU 1448 2.2	W 1634 1.7	SU 1652 0.9	TH 1527 1.7	F 1654 1.4	M 1718 1.3
2011 5.6	2155 5.9	2157 6.8	2050 6.1	2205 6.1	2224 6.3

Tidal Streams

Tidal stream data can be found on charts (sailing maps) in the format of **Tidal Diamonds** (below, left) or in **Tidal Stream Atlases** (below, right).

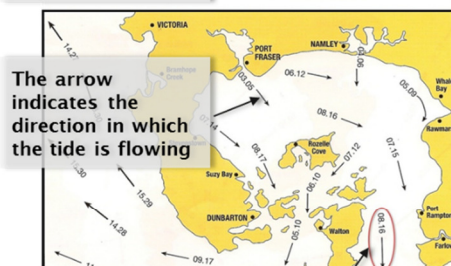
Hours	A 50 42' 3N 0 26' 5E			B 50 53' 0N 1 00' 0E			C 51 01' 0N 1 10' 0E		
	Dir	Sp	Np	Dir	Sp	Np	Dir	Sp	Np
Before HW									
6	248	0.8	0	243	0.9	224	0.9	0.5	
5	067	0.5	0	032	1.0	039	1.0	0.6	
4	068	1.9	1	033	1.1	036	1.1	0.6	
3	071	2.6	1	033	0.6	04	0.6	0.4	
2	069	2.3	1	033	0.8	05	0.8	0.3	
1	068	1.2	0.6	033	0.8	05	0.8	0.3	
HW	067	0.1	0.1	032	1.5	08	1.2	0.7	
After HW									
1	248	0.9	0	032	0.9	05	1.3	0.7	
2	247	1.4	0	032	0.6	05	1.0	0.5	
3	251	1.8	0	032	0.6	05	0.5	0.3	
4	253	1.7	1.0	032	0.4	02	0.4	0.2	
5	250	1.6	0.9	211	0.4	0.2	219	0.4	0.2
6	249	1.2	0.7	212	1.3	0.7	217	0.8	0.4

Speed of the tide at Springs in knots

Speed of the tide at Neaps in knots

Tidal hour relative to the time of High Water

2 hours after HW VICTORIA

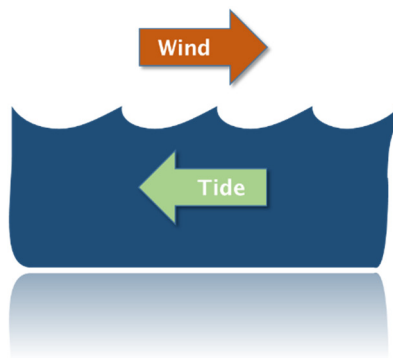


Speed with which the tide is flowing – the larger number is the speed if it's a spring tide and the smaller number is the speed if it's a neaps tide. The highlighted numbers - 08.16 - means 0.8knots during neaps and 1.6 knots on springs.

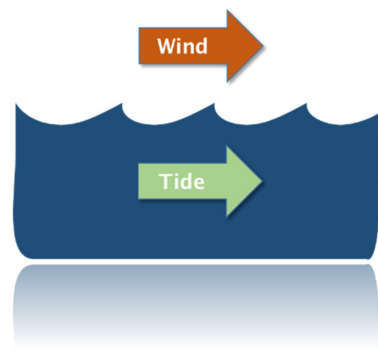
Speed Through The Water v. Speed Over Ground

Boat speed is also known as speed through the water. But if we have tidal streams as well this will make us either go faster or slower and this is known as the speed over the ground (SOG). Think of a traveller – if you are walking along here at 2 mph and this is moving at 1mph – you will be doing 3mph over the ground and if you were trying to walk against it you would only be going at 1mph over the ground. The same applies to tidal streams. So is in the case of the Tidal Stream Atlas if we were sailing south on a neap tide and our boat was doing 5 knots (knots are a unit of speed = Nautical miles per hour) the tide is also helping us at a rate of 0.8 knots so we would be doing 5.8knots SOG.

Wind v. Tide



The sea is roughest when the wind and tide are going in opposite directions.



The sea is calmest when the wind and tide are going in the same direction

Weather

Weather is vital to sailing – it determines whether we set sail or not. Weather information can be found in many places including:

- Internet
- Harbour masters, yacht clubs, marinas
- Television
- Teletext
- Navtex
- Meteorological Office
- Local radio stations
- Shipping forecasts
- Coastguard via VHF radio – marine safety information

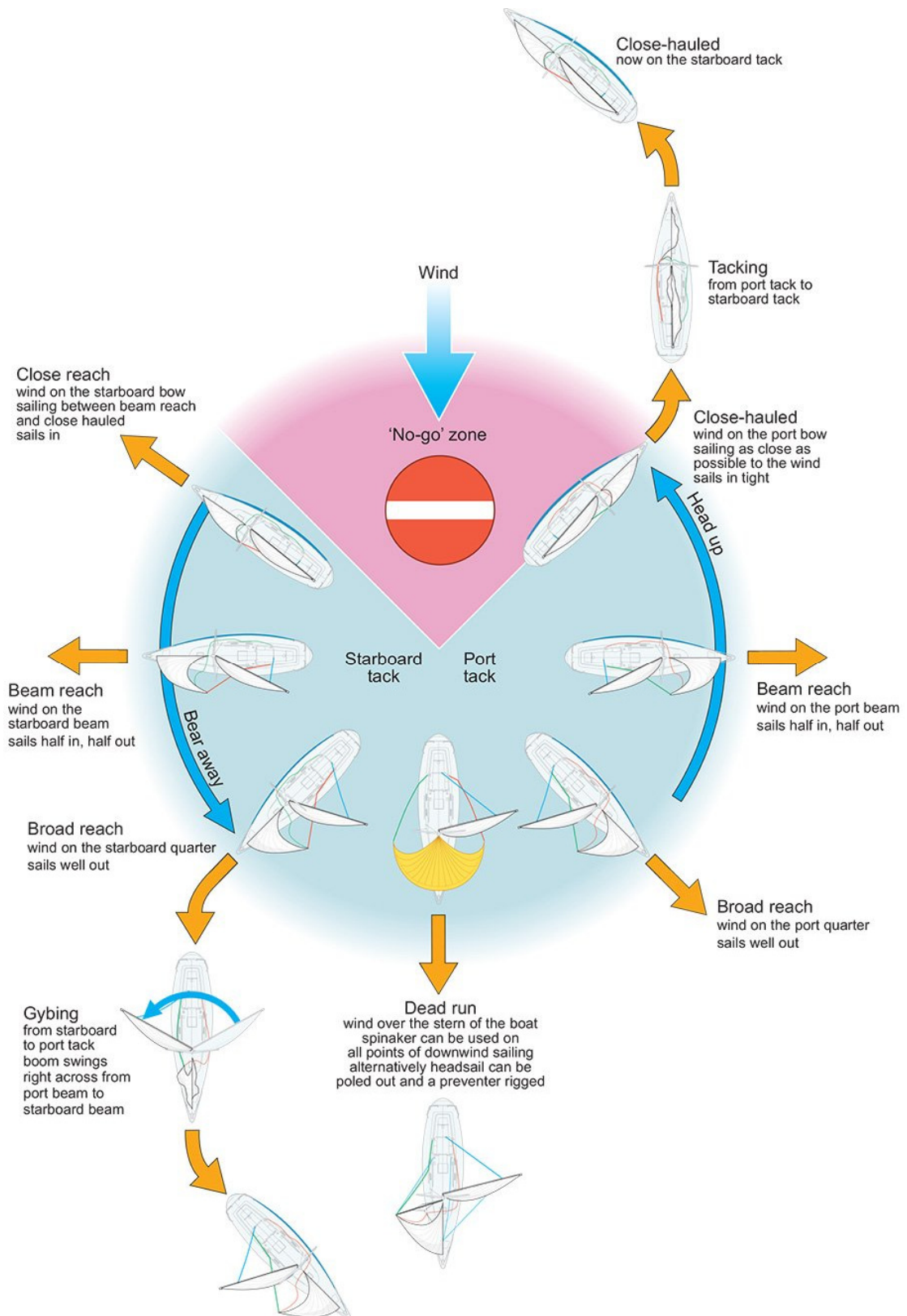
The vital thing is how to interpret what the information means. When we talk about wind speed we talk about the **Beaufort Scale**:

▪ Force 1 Light airs	1-3 knots of wind	Drift rather than sail!
▪ Force 2 Light breeze	4-6 knots	Full sails up
▪ Force 3 Gentle breeze	7 – 10 knots	Still need full sails up
▪ Force 4 Moderate	11 -16 knots	Think about reducing the size of the headsail
▪ Force 5 Fresh breeze	17-21 knots	May need to reduce the size of the main sail as well
▪ Force 6 Strong breeze	22 – 27 knots	Further reduction in the size of both sails
▪ Force 7 Near gale	28 – 33 knots	As little sail as possible!!

Force 6 and 7 are known as a **Yachtsman's Gale** – Think - do I need to sail in this?

Racing Start and Course

Most racing courses are set to provide a combination of beating, reaching and running. Here is a diagram describing the different points of sail.



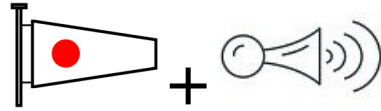
Starting Signals

The start line in racing is normally at 90° to the wind, but this may be altered slightly “biased” to allow for tidal streams or unbalanced wind directions.

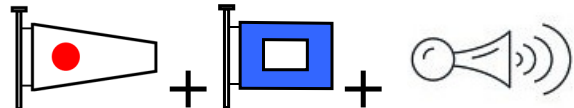
At the start of the race there are warning sounds and flags to countdown to the start – the aim is to be at the starting line on the start signal (not over it!) and ideally leeward of all other vessels and on a starboard tack... this will become more clear during your course.

The sequence of flags and sounds is as follows:

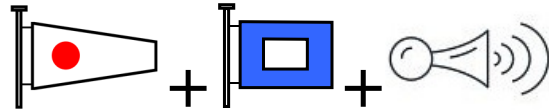
5 minutes before the race commences the **class** flag is raised. These are normally the number flags – the one shown is the **number 1** flag. The flag is raised and one blast sounded – this is known as the **warning signal**



At 4 minutes before the race commences we have the first preparatory signal and this is the class flag plus the **P flag** and one blast



At 1 minute before the race commences we have the last preparatory signal and here the **P flag** is removed and a long blast sound signal is made



At **go** the class flag comes down and one blast is given.

