The Knowledge

So, you are going to get, or already have, a boat. Excellent!

For those that are new to this boating lark, there is a fun learning curve ahead of you. For those that are more seasoned, there may still be a few areas worth brushing up on. In either case, the following is a list of what we think is important to know and do.

Essential Knowledge

You can delve into a lot more details for any of these areas and indeed we have a section on the site that lists courses and training providers who can provide in-depth knowledge and specific qualifications, but as a broad sweep, these are things that will help make your experience safer, more pleasant and potentially open new horizons. We would recommend those with motor boats take the Day Skipper or PowerBoat Level 2 Course and your VHF radio license courses as a minimum :

Safety First

Two non negotiable points to cover:

1. Ensure everyone on board is wearing a lifejacket.
2. Ensure you have a VHF radio (portable or fixed, or both) and you have a license to operate it and therefore know your channel 16 from 70.

Pre-Checks for each trip

1. Check your belts for wear and tension
2. Check the oil levels
3. Ensure there are no fresh traces of oil or fluids on or around the engine
4. Check coolant levels
5. Check your battery charge levels
6. Ensure you have enough fuel for the trip (never use more than 1/3rd of your fuel going anywhere).
7. Do you have fresh water on board and provisions needed.

When travelling internationally, ensure you have all the right paperwork - including insurance, qualifications, proof of VAT payment, VHF radio license and passports on your vessel. Also ensure your tender is marked with a ‘T/T’ (Tender To) and your primary boat name (eg T/T Marine Dreams). Otherwise (even if it’s a 2m inflatable) it may be considered a separate vessel and require it’s own paperwork.

Navigation

Switch on the GPS and follow the map? That’s it, yes!? - not quite…...

For a lot of river and coastal boaters taking a short cruise or spin round the bay, navigation by landmarks is the way it’s done. You you can see where you are going and as long as everything looks familiar, all is well. Nothing especially wrong with that...provided you know the state of the tides, current and weather of course (more on these below). However, what if you want to go further, to new coastline, other ports, harbours or marinas, further out to sea, overnight or a long weekend etc. This then, requires a little more planning and preparation. See the section below about Passage Planning.

Always have a hard copy nautical map of the areas you are travelling in. In addition, if you have a tablet/smartphone and can have back ups on these, so much the better. There are some great apps out there to supplement your on board systems and printed maps.

Longitude and Latitude are the currency of navigation, and also rescue, so have a basic understanding of these - https://en.wikipedia.org/wiki/Geographic_coordinate_system

Learn how to locate yourself on these maps using latitude and longitude coordinates from your GPS and also by using two different landmarks to triangulate your position. Very handy if you need to tell someone your location!

Passage Planning (and Pilotage), Weather and Tides

Before launching into the things to know and consider about your journey. There are some fundamentals to take into account: Does your boat require any maintenance before the trip, do you have enough fuel (consumption estimates will form part of your passage plan), what are the limitations of your vessel and crew - clearly crossing the atlantic with a 21 foot dinghy with no safety equipment and a green crew of one isn't a good idea! - do you have enough lifejackets and other safety and emergency equipment and are you sure they are all working? Ensure you have sufficient provisions for a minimum of 24 hours to sustain crew and passengers.

Whenever you are planning a trundle out, you'll need a plan and to know the likely weather and state of the tides. The time taken to prepare for the trip is generally commensurate with the length of the journey - so a quick whizz around the bay requires less planning than a 200 mile international journey including Tidal Gates and Harbours. Whenever going out we suggest keeping a log of your journey and regularly record your position in coordinates and notes relating to any weather changes.

Pilotage

This is a grand sounding word for basically knowing your way in and out of harbours and other areas that require precise navigation. Specifically knowing where to approach the harbour from (somewhere between the green and red marks on a harbour or nautical chart) the safe channel for entry and exit, the positions of the channel markers/buoys and whether any of the harbour is affected by the tide - ie does the water get too shallow for the draft of your boat and if so, when! And quite importantly the location of the visitor moorings/berths. The best/simplest answer is to draw yourself a little chart, noting marker buoys or landmarks you can navigate by. To supplement this, we would always recommend having a nautical almanac covering the harbour you want to visit as it will have notes and guidance to assist with your pilotage planning.

General Passage Planning

The bit between the start and end of your journey. Critical elements are the timings (this can be estimated by speed and distance, but you'll need to factor in weather conditions if they are going to slow you down) and the waypoints/locations along the journey. There may be none, there may be many, but charting your route (both on a physical nautical map and via an electronic GPS or one of the many Apps available) will help show this. Try planning your route in sets of straight lines with waypoints to separate them as well as knowing the distance and likely times between them. Note down, and where necessary plan, your waypoints to avoid navigational dangers and busy shipping lanes. In the case of the latter, especially if there is a traffic

separation scheme, know how to enter the lane and ensure you travel in the correct direction. Nobody wants a large fine or indeed a supertanker bearing down on them!

Know the fuel consumption of your boat (if applicable), so you can accurately estimate the fuel requirements for your trip - this can be in miles per gallon or gallons per hour. Either way, it needs to be factored in and never use more than 1/3rd of your fuel on the outward part of your journey.

There is more below, specifically about Tides and Weather which must be factored in to any Passage Plans. Particularly when it comes to the timing of your trip in relation to changing tides and wind direction. Wherever possible you should avoid wind against tide (or more specifically wind against tidal current), particularly if either are strong and especially if both are.

Tides (Times, Ranges and Currents).

Essentially the variation in water height (high and low water) as measured relative to fixed points along the coast (Most people will know this!). The amount of variation will depend on the area (can be 2 meters in one place and 10 meters in another) and crucially the phase of the moon. The latter creating ‘Spring Tides’ twice a month at the point of new and full moon (approximately 14 days apart) and ‘Neap Tides’ 7 days later in each case. The ‘Spring’ tides give the largest variance in tidal height (and strongest currents) and the neaps the least.

Tides work across approximately 6 hour intervals. So, for example, high water might be at midnight, and low water at 6.00am and then back to high water at midday. It’s worth noting though that it is not exactly every 6 hours and the times of high and low water will change every day. Indeed in some 24 hour period there will only be 3 high and low tide times with the fourth going forward into the next day.

Tidal height is important when it comes to navigating tidal rivers and coastline, entering harbours that have cills (those concrete things that are used to keep the water in at low tide) and for the length of line to use when anchoring (notes on anchoring are below).

Tidal times are important, but the consequent tidal currents equally so. The currents are the direction the water flows and this changes as tides come in and out, critically though, currents move in directions you may not expect. They are stronger around headlands, islands and other places where water is forced around a physical body or mass. There are many tidal charts on the market that show the direction and strength of currents relative to tide times, we also recommend using some of the Apps available for showing tidal currents at given times. It’s important to consider tidal current strength (can range from 0.1 knots to 8 knots and that’s quite a difference - especially if you’re sailing and you are only making 6 knots) and direction in conjunction with wind to try and ensure they are not opposed when you will be passing by (as discussed above, this can make for a bumpy time). When passing areas with strong currents it can be helpful to plan your timings to co-incide with what’s known as ‘slack water’ - the time usually either side of the tide turning - which can yield calmer waters.

Weather

We would suggest looking at the 24 hour forecast and also the longer range forecasts to get a sense of weather and pressure systems that are knocking around. Changes in air (barometric) pressure is a good indication of changes in weather as they herald new weather fronts. You don’t need a barometer of course,

but those travelling longer distances would be advised to carry one. The coastguard (VHF channel 16 - but you'll already know this) will also provide barometric readings on request.

Wind is the primary element to concern yourself with. Whether you are a sailor and want a decent blow or a motor boater who wants to avoid it, look at the weather forecast and broader trends too. We're not going to go into rain (that's the stuff that falls 364 days a year in the UK) or sunshine (that's the other day, usually in early summer), as this doesn't so much affect your passage as your mood.

Hazards, Lights and Symbols

Whether browsing a chart, or staring at an odd shaped floating thing with lights on, learn what the basic markers buoys look like and mean, day and night.

A useful guide to chart symbols - https://www.imray.com/uploads/Charts/Key_to_Symbols_2013.pdf

A visual guide can be seen at - http://www.rya.org.uk/cruising/navigation/Pages/tips.aspx

AIS, Radar and Radar Reflectors

AIS (Automatic Identification System). A very neat bit of technology commercially used to supplement Radar, but can be both interesting and increase safety for recreational boaters. There are a number of Apps available that allow you to track boats that transmit AIS data. This includes their precise location, size, type and often destination. Many recreational craft can have transmitters and receivers (transducers) fitted as both a navigational aid (doesn't read correct) and to enable them to be seen by other vessels.

RADAR (RAdio Detection And Ranging).. The majority of mid-sized and larger motor boats and yachts will have a Radar transmitter and receiver fitted. Very handy for identifying (and avoiding!) other vessels, especially in poor visibility. Remember though, that Radar doesn't work well with fiberglass or wood (very likely what your boat is made of), so you'll need to fit a radar reflector for others to see you on their Radar receivers

Berthing and Moorings

Let's start here with the ideal situation. Mooring alongside a pontoon. Whether visiting or on your home berth, these offer the best safety and convenience.

All boats handle differently and have different set ups, from single engine inboards to twin shaft drives. Getting to know your own boat and practice is the only way to be able to handle her at close quarters with confidence. Many of us though are still nervous of getting in and out of berths, especially with a bit of wind. Here are some general pointers which we think are handy.

Whilst learning, put out plenty of fenders on both sides of the boat. Have someone on the dock and on the boat to help you getting on and off your berth. Ask your local harbour or marina if they have some free double berths for you to practice in. Also consider getting someone from a local training school to come and give you some tuition for a day. This can be the quickest and easiest way to get to grips with the basics and make the whole process a lot less daunting.

Go slowly - never travel faster then you are prepared to hit anything. When we say slow, we mean s…..l…..o…..w. Give yourself time to react and take the stress out of it.

Keep calm - Use power sparingly with small pulses of power to push you in the direction you wish to go and then shift out of gear . Let the boat drift without power and use the gears or bow thrusters to correct your direction as needed.

Sailing boats with rudders and particularly twin engined boats are generally easier to control as they enable you to run the engines in opposite directions. This, give or take, will turn you within your own boats length and makes turning 90 degrees easier. Some people advise just using the engines to steer when docking, others to use steering and engines. The best for you will depend on both your preference and your boats handling.

Note the wind direction and use that to your benefit. If you're being blown on to your berth, then approach more slowly and let the wind do the work. If you're being blown off your berth, then either come in backwards (stern to) or if you do want to park bow (nose) in, keep your bow into the wind and come in at an angle with the front of your boat aimed at the side of your berth and let the wind bring you round parallel when you're ready to dock. Remember that the bow is what will be moved by the wind much more than the stern. So only expose the bow to cross winds when you are ready to use it to your advantage. When maneuvering into wind, you can use a little more power as needed to ensure control.

Anticipation is important when manoeuvring at close quarters. Apply power and steering a little before you need it in order to give the boat time to react and to reduce the whole frantic waving and shouting business. Take note of any dangers in the direction you are drifting and start moving away from them in good time.

Most importantly of all, don't be afraid to spin round, go back up the channel and have another go at it. Better to abort early if you're not where you want to be and just come round again. It is very common for even the most experienced boaters to have two or three goes at docking when conditions are challenging and sometimes even when they're not.

Know the VHF channel of the marina or harbour you are docking in. Very often a pair of helping hands is but a quick radio call away.

When entering and departing a mooring, try using spring lines (ropes) to make life easier and help mitigate the wind (and indeed the need for excessive bow thruster use). The following link is an excellent guide to their use - http://www.boatus.com/magazine/2013/February/docking-with-spring-lines.asp

Know a couple of knots well - particularly the 'cleat hitch', ''bowline' and 'clove hitch' (very handy for fenders) - makes things quicker and safer (plus you feel like a proper sailor when you can use the right knots and keep your lines and warps looking tidy. Have a gander at - http://www.animatedknots.com/indexboating.php#ScrollPoint

Swinging Moorings - these are buoys, often yellow marked with a 'V' and sometimes showing the maximum length of a vessel that can moor there - you'll find in rivers, estuaries and around harbours) are a great place to secure your vessel (provided you have a tender to get to shore, or there is a local water taxi service - if needed, as part of your passage plan, it's a good idea to check the almanac or local websites for water taxi VHF stations or phone numbers).

Approach the Mooring from downstream or wind (whichever is stronger) and approach slowly, aiming to be stationary when you reach it. Either have a crew member with a boat hook on the fore deck to grab the buoy ideally with a bowline secured at one end to your cleats (note that some mooring buoys have ‘pick-up buoys’ and their own lines you can attach to your vessel). If your boating solo, we find it easiest to pick up the buoy near the stern of the boat; have a line secured to your stern or midships cleat and have that and a boat hook ready so you can grab the buoy and loop your line through the buoy ring and attach back to a convenient cleat. This then gives you time to use secure a longer line to your bow cleats and loop through the buoy ring. Once this is secured, you can then remove your initial line and take up the slack.

Ultimately, when visiting for a few hours you want a decent line looped through the buoy ring/shackle (ideally running over the anchor roller to minimise rubbing - if you are regularly using swinging moorings, then you may want to find easy ways of removing your anchor in these situations to free up the anchor roller) attached to your bow cleats. You could/should also use a backup line attached to a cleat and slightly slacker than the primary lines. It’s also a good idea if using rope for mooring to use some hose/something over the line where is passes through the buoys shackle to prevent it rubbing.

Please note here that if you are using a swinging mooring as a permanent berth, overnight or in strong currents/weather, then you should use a fairlead/chain and hook rather than rope for securing your vessel. All the necessary bits are available from a good chandlery. As ever, go prepared (always better to have too much gear than not enough) and check the weather, tides and currents before travelling.

There are a few other mooring types out there, in brief they are as follows:

Fore and Aft/Trot Moorings - These are where your boat is secured both fore and aft and therefore doesn’t swing. Often seen along the sides of estuary and river channels.

Pile Moorings - two fixed posts that you secure to fore and aft. A useful guide to these can be seen at - http://www.sailtrain.co.uk/anchoring/piles.htm

Please note that as with some Harbour Wall moorings, some swinging and trot moorings are semi drying (water level drops to levels not suitable for most boats - know the tides and the draft of your boat) and drying moorings (boat will be on the sand/mud for periods of the tide). You need to be sure your engines will not be bearing the weight of the boat and sailing boats with single keels will, of course, lean when the mooring dries out.

On the subject of Harbour Wall moorings, always check the tides and the amount of time you are leaving the vessel so you can adjust your mooring line length accordingly and make sure the lines go through fairleads and not under any guardrails. You don’t want to come back and find your boat suspended above the mud, or perhaps worse, held up then breaking something and falling. Try explaining that one to the insurance company!

Anchoring

The first misconception is usually the amount of line (rode) required to give the correct length of line (scope) required for effective anchoring. Once you know the depth of the water (plus the draft of your boat of course) you should allow 5 x that total (and for longer stays perhaps 7 x plus) in scope. This can be reduced a little if you are just using a chain to perhaps 4 x for shorter anchoring periods. Please note that a boat will move (swing) around the anchor, so depending on the depth of water (and therefore the amount of line) ensure you have sufficient clearance from other vessels or hazards.

Remember to factor in the tides and the draft of your boat. Don't, for example, anchor your boat in 3 meters of water at near high tide and leave her for hours at a time. Depending on the tidal range, best case scenario is that you will be sat on the mud/sand for 3-6 hours, worst case you will do serious damage to your boat/engines and potentially people.

Ok, so that out of the way, depth and tide are of course key factors when anchoring, the spot you choose is also rather important.

When anchoring for any amount of time, it's ideal to pick a good sheltered spot. Remember that large hills/mountains can generate strong gusts of wind. Trees are an excellent windbreak and can help keep things more settled for you and vessel. The strata and types of rocks/cliffs visible from the sea can often give you an insight into what lies beneath.

If you have a decent fish finder or perhaps one of the newer 3d sonars, then you should get a good idea of both the composition of the sea floor (rocks aren't what you want!) and also how level it is. If you are using a good old fashioned depth finder (we're going to assume nobody is using plumb lines) then slowly circle the spot you wish to anchor and check the readings for any large variances. Once happy the ground is fairly level under you, approach your chosen spot from downwind and stop. Lower your anchor (by hand or with your windlass) and then slowly reverse your boat until you have released the desired amount of line. Always use the engine to 'set' the anchor and always have the engine running when using a windlass (they eat batteries). Assuming the anchor hasn't dragged (if it does, repeat the procedure in another location - never assume it will just be ok) pick some fixed landmarks - ideally 180 degrees apart with you in the middle (stretch your arms out and point your fingers out at your landmarks) - and watch for a while to ensure you're staying put and it gives you something to check back on later to ensure you aren't drifting. Once you're happy you're staying put, shut down the engines, sit back and enjoy the view!

One little tip passed on to us is that if you are using an all chain anchor line, have the (none anchor) end of it secured to your boat in your anchor locker by a piece of rope. That way, if ever your anchor gets caught in some rocks and it isn't possible to retrieve it, you can always easily cut if free in a hurry. At least then you've only lost your anchor and can get home.

For more information and a guide to using two anchors to reduce and prevent swinging, take a look at - http://www.yachtingmagazine.com/anchoring-tips

Another handy guide can be seen at - http://www.cautionwater.com/article.aspx?articleid=85