Course laying with a GPS

A TopYacht paper (Sep 2005).

Any triangular course can be quickly & easily laid with a GSP

- with a *total* of two button presses on the GPS and
- a few simple calculations on a standard 'course layout' sheet.

In essence a GPS gives you just two things, the distance and bearing (compass bearing) to any known point. So given one (reference) point you can set a course without needing to do anything but read distance and bearing (on the GPS) to the one known point.

Prior to using the GPS for course setting..

Your club needs to select say 3 (or more if necessary) points (on the water) that will may be used for a bottom mark for a race (depending on the day's wind direction etc). Go on the water, go to those points and enter them into the GPS as A, B, C. These are stored permanently and become the reference points for all courses.

On the day for the race…

- The race committee considers the conditions and nominates one of the 3 points as the bottom mark for today. [Scaled course cut outs placed on chart makes this easy.]
- The race committee nominates the specific course for today eg 'Port Triangle'.
- Depending on wind strength and desired race duration the race committee nominates a beat length. [Refer to standard 'beat length for lap time chart' in TopYacht software.]

The course laying boat (when on the water) ..

- Press the Goto button on the GPS
- Select the relevant point eg A
- Then use the GPS to go to that point and lay the mark. (Approach from downwind to lay mark.)
- Record the wind direction over time and decide on the wind bearing to the top mark.

Example..

Wind bearing	90 deg
Bearing to top mark (*from* bottom/ref mark)	90 deg
'Back Bearing' from top mark #	270 deg

ie bearing *of* bottom mark *from* the top mark.

Still with the GSP set to 'GoTo A' ie the bottom mark..
Drive boat in general direction of top mark.
Adjust (boat) course as you go so that the bearing to A (bottom mark) is 270 degrees.
When you get to the desired beat length drop the mark.

For the wing/gybe mark (assume port course, 45 triangle)..

Wind bearing	90 deg
Bearing to wing mark (*from* bottom/ref mark)	90 – 45 = 45deg
'Back Bearing' from wing mark #	225 deg

ie bearing *of* bottom mark *from* the wing mark.

Still with the GSP set to 'GoTo A' ie the bottom mark..
Drive boat in general direction of wing mark.
Drive until you the bearing to A (bottom mark) is 225 degrees.
Drive towards or away from bottom mark until distance = 0.7 times beat length.
Lay mark where bearing = 225 & distance is appropriate. [Lay mark from downwind.]

Same system works using Top Mark as reference. Non triangle courses involve one more step.

Back Bearing Calc: If angle less than 180 then add to 180
otherwise subtract 180 from angle.
OR use course calculator or lookup tables.

OooOOOooo