

Boston Sailing Center

Coastal Navigation

Practice Problem Set Answers

1. I would aim for R "2" BELL south and a bit east of West Island.
221°T 236°M
2. Deviation on a Heading of 193°C is closest to 2° East. If the compass had no deviation it would point 2° further west, so the actual heading is 195°M.
3. COG = 007° + 180° = 187°M
Leeway = 195°M - 187°M = 8°
4. Plot the COG from above and measure 2.5 nm from the starting buoy.
41° 38.5' N 070° 40.3' W
5. Heading of 195°M on starboard + 90° tack = Heading of 285°M on port + 8° leeway = COG of 293°M.
Deviation at Heading 285°M is 3° East. The steering compass should read 282°C.
6. The three bearings form a triangle slightly larger than you might like, but the EP falls inside that triangle and it wouldn't shift much if moved to the center.
So something near 41° 38.7 N / 070° 43.8 W.
7. A bearing of 272°M on R N "2A" marking West Island Ledge works well.
If you maintain a bearing >= that you will be in safe water.
8. From Eldridge p. 24 we learn that at Dumpling Rocks:
Ebb starts 2h 30mins before Woods Hole
The Set of the Ebb is 190°T
The Max Velocity of the Ebb on average is 1.1 kts
Also from Eldridge, we see that on July 3:
2:42 pm Ebb starts at Woods Hole, so. . .
12:12 pm Ebb starts at Dumpling Rocks
3:15 pm is about Max Ebb at Dumpling Rocks
Sailing this leg between 3:00 and 3:30 will give us Average Max Ebb
Our current speed on the 3rd is 1.1 kts
A half-hour Current Vector will have a direction of 190°T and a length of 0.55 nm
9. Plot the current vector found above from the Mosher Ledge buoy.
Set your dividers to 2 nm (one half hour of boat speed).
Measure from the end of the current vector back to the line between the buoys.

Plot the line connecting the points of your dividers. That's the heading to steer.
I get 307°M minus Deviation of $2^{\circ}\text{E} = 305^{\circ}\text{C}$.

10. Eldridge p. 15 (mid page)

South Dartmouth 30 mins after Newport

Average rise 3.7 feet at S. Dartmouth

Eldridge p. 87 July 3rd at Newport

High at 11:32 am then Low at 4:46 pm

Height of 3.1 is 0.4 ft (10%) below average

High at Padanaram at 12:02. Low at 5:16.

Arrival at Padanaram approximately 4:00 pm (4 nm from Mosher Ledge at 4 kts)

A 4:00 pm arrival is about $\frac{5}{6}$ of the time after High and $\frac{1}{6}$ before Low, so...

There should be $\frac{1}{12}$ of the high tide (ie 3.1") remaining above the low

And since we have a below-average high, we have an above average low,

There will be 3 or 4 inches of water above the charted depth.

I would do a quick run through the Rule of Twelfths here, then treat the situation like it was low tide per the chart.