SOUTH AFRICAN SAILING

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# SAMPLE CHARTWORK - DAY SKIPPER ANSWERS

*Updated 8 December 2014*

1. 086°T; 150°T; 244°T; 347°T
2. 032°C; 120°C; 221°C; 308°C
3. 088°T; 153°T; 197°T
4. 009°T; 113°T; 208°T
5. From chart 3002, the transit is 140°T. So dev = 5°E
6. From chart 3002, the transit is 114°T. So dev = 6°W
7. at 347°C, deviation is 7°E. So total compass error is 20°W - 7°E = 13°W. The true bearings are 354°T; 086°T; 186°T; 286°T
8. Variation 2020 = 24° 53'W + 11 x 7'W = 26° 10'W Transit = 294° 45'T + 26° 10W = 320° 55'M. Round to 321°M. Deviation = 321° - 320° = 1°E
9. 352°T; 097°T; 177°T; 310°T
10. 021°C; 103°C; 226°C; 004°C
11. 340°T; 123°T
12. 33° 51.4'S and 018° 19.4'E
13. 34° 09.4'S and 018° 18.4'E
14 34° 06.1'S and 018° 18.2'E
15. 34° 28.8'S and 018° 38.0'E
16. 33° 47.5'S and 018° 24.0'E
17. CTS 107°T to 108°T SOG 4.2 to 4.3 knots
18. Course = 190M = 1.66T. Set 353°T or 017°M, rate 2.0 knots
19. COG 343°T SOG 8.0 knots
20. Set 344°M to 345°M, better stated as 320°T to 321°T (current should always be given in true). Rate 2.1 to 2.2 knots
21. COG 297°T to 298°T. SOG 3.4 knots
22. CTS 063°T. SOG 4.6 to 4.7 to 4.8 knots
23. You helmsman is sailing 065°T but with 15° leeway your water track will be 050°T.
    COG = 025°T
    SOG = 3.5 knots
24. From your vector diagram, you require a water track of 118°T. However with 10° leeway on a port tack you will need to steer 108°T to achieve this water track.
    SOG = 4.9 knots

25. You are steering 095°M but with 15° leeway, your water track will be 080°M
    Set = 286°T or 310°M
    Rate = 1.9 knots
26. Your helmsman is sailing 110°T but with 15° leeway your water track will be 125°T.
    COG = 103°T
    SOG = 3.8 to 3.9 knots
27. From you vector diagram, you require a water track of 201°T. However with 10° leeway on a port tack you will need to steer 191°T to achieve this water track.
    SOG = 5.3 knots
28. You are steering 280°M but with 10° leeway, you water track will be 290°M.
    Set = 151°T or 175°M
    Rate = 1.8 knots
29. Your helmsman is sailing 050°T but with 15° leeway your water track will be 065°T.
    COG = 046°T
    SOG = 5.9 knots
30. From your vector diagram, you require a water track of 141°T. However with 10° leeway on a starboard tack you will need to steer 151°T to achieve this water track.
    SOG = 6.0 knots
31. You are steering 110°T but with 10° leeway, your water track will be 100°T. Set = 313°T
    Rate = 1.8 knots
32. Your helmsman is sailing 310°T but with 15° leeway your water track will be 295°T. COG = 318°T SOG = 3.2 knots
33. From you vector diagram, you require a water track of 188°T. However with 10° leeway on a starboard tack you will need to steer 198°T to achieve this water track. SOG = 6.3 knots
34. You helmsman is sailing 275° but with 15° leeway your water track will be 260°T.
    COG = 272°T
    SOG = 3.5 knots
35. From your vector diagram, you require a water track of 288°T. However with 10° leeway on a port track you will need to steer 278°T to achieve this water track.
    SOG = 5.0 knots
36. Your helmsman is sailing 045°T but with 5° leeway your water track will be 040°T.
    COG = 024°T
    SOG = 6.2 to 6.3 knots
37. From your vector diagram, you require a water track of 141°T to 142°T. However with 15° leeway on a port tack you will need to steer 126°T to 127°T to achieve this water track.
    SOG = 4.6 knots
38. Your helmsman is sailing 220°T but with 10° leeway your water track will be 210°T. COG 243°T SOG = 4.6 knots

39. From your vector diagram, you require a water track of 054T to 055°T. However with 15° leeway on a starboard tack you will need to steer 069T to 070°T to achieve this water track. SOG = 4.7 knots
40. You are steering 080°T but with 15° leeway, your water track will be 065°T. Set = 021°T Rate = 2.1 knots
41. Your helmsman is sailing 350°T but with 15° leeway your water track will be 005°T. COG = 028°T, SIG = 5.1 knots
42. From your vector diagram, you require a water track of 229°T. However with 10° leeway on a port tack you will need to steer 219°T to achieve this water track. SOG = 4.1 to 4.2 knots
43. 33° 55.7'S and 018° 17.6'E
44. 34° 08.4'S and 018° 37.8'E
45. Earliest time = 14h28. Tide at 16h00 = 2.42m. Depth = 3.32m. See the worked answer at the end of this document.
46. Earliest time = 10h15 Tide at 12h00 = 2.24m Depth = 3.84m
47. Tide at 11h00 = 1.30m. When the tide is 1.7m the time will be 0958

**Worked answer to question 45**

| | |
|---|---|
| Draft | 1.9m |
| Plus clearance required | 0.5m |
| Depth required | 2.4m |
| Less charted depth | 0.9m |
| Tide required | 1.5m |

| TIME | HEIGHT |
|---|---|
| 1210 | 72 |
| 1312 | 92 |
| 1414 | 132 |
| 1516 | 192 |
| 1618 | 252 |
| 1720 | 292 |
| 1822 | 312 |

Tidal interval = 06h12 Tidal hour = 01h02

Tidal range = 2.4m One twelfth = 0.2m

For those who are at home with simple proportion, the easiest way to interpolate is probably mathematically, thus:

Earliest time = 14h14 + (62 x 18/60) = 14h33

Height of tide at 16h00 = 192cm + (60 x 44/62) = 235cm = 2.35 m

For those who find it difficult to interpolate mathematically, it is quite acceptable to draw a rough graph or to interpolate by eye. An exact answer is not required. The rule of twelfths is an approximation in any case.