



SAMPLE CHARTWORK QUESTIONS – DAY SKIPPER

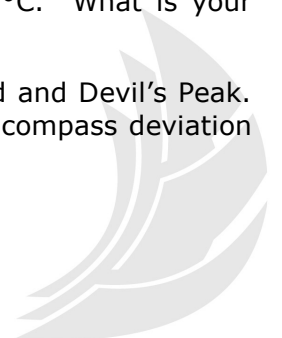
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Unless otherwise specified, all chartwork questions relate to chart SAN 3002. Some questions might ask you to use deviation card No1 for your yacht's steering compass:

DEVIATION CARD No 1						
Compass	Deviation	Magnetic		Compass	Deviation	Magnetic
000°	8°E	008°		180°	8°W	172°
023°	6°E	029°		202°	6°W	196°
045°	4°E	049°		225°	4°W	221°
067°	2°E	069°		247°	2°W	245°
090°	0°	090°		270°	0°	270°
112°	2°W	110°		292°	2°E	294°
135°	4°W	131°		315°	4°E	319°
158°	6°W	152°		337°	6°E	343°
180°	8°W	172°		000°	8°E	008°

THE MAGNETIC COMPASS

- Using a variation of 8°E and deviation card No1, convert the following compass course to true courses 077°C; 147°C; 239°C; 333°C.
- Using a variation of 24°W and deviation card No1, convert the following true courses to compass courses: 013°T; 093°T; 193°T; 287°T.
- Convert the following bearings taken with a hand held compass to true: 112°C; 177°C; 221°C. Variation is 24°W.
- You are sailing 313°C on your ship's compass. The variation is 24°W and deviation card No 1 applies to your ships compass. Convert the following bearings taken with your hand bearing compass to true: 033°C; 137°C; 232°C.
- In order to check the deviation of your compass, you motor toward Signal Hill keeping Signal Hill in transit with Devils Peak. Taking the average of several readings on your ship's compass you conclude that your compass heading on this transit is 159°C. What is your compass deviation on this heading?
- To check your compass deviation, you sail along the transit of Lion's Head and Devil's Peak. Your yacht's compass says you are heading 144°C. What is your yacht's compass deviation on this heading? Use a variation of 24°W.



7. You are sailing 347°C on your ship's compass. Variation is 20°W (Not 24°W) and deviation card no 1 applies to your ship's compass. Convert the following bearings taken with your ship's compass from compass to true: 007°C ; 099°C ; 199°C ; 299°C .
8. It is 2020 and you decide to check your deviation card by means of a transit on the two beacons just south of Simonstown. With your vessel heading to the shore along the transit line, your ship's compass reads 320°C . What is the deviation of your compass on this heading? Refer to chart SAN3002 and remember to update your variation to 2020.
9. Using a variation of 24°W and deviation card No1, convert the following compass courses to true courses: 009°C ; 124°C ; 207°C ; 329°C .
10. Using a variation of 24°W and deviation card No1, convert the following true courses to compass courses: 003°T ; 078°T ; 198°T ; 348°T .
11. You are sailing 150°C on your ship's compass. Convert the following bearings taken with a hand held compass to true 004°C ; 147°C . Use the variation of 24°W . Deviation card No1 applies to your ship's compass.

FIXES

12. At 2320 you take three bearings on your hand held compass. Robben Island light bears 071°C . Milnerton Light bears 123°C . And Green Point Light bears 150°C . Plot your position. What is your latitude and longitude?
13. At 0440 Slangkop Light bears 075°C on your hand held compass and your depth is 21m. It is approximately mid way between low and high tide. Plot your position. What is your latitude and longitude?
14. At 1020 you take three bearings on your hand held compass. Hangberg Peak bears 058°C . Chapmans Peak bears 099°C . And Slangkop Lighthouse bears 188°C . Plot your position. What is your latitude and longitude?
15. At 0130 you take two bearing on your hand held compass. Cape Point Light bears 342°C . Hangklip Light bears 084°C . Plot your position. What is your latitude and longitude?
16. At 1130 you take two bearings on your hand held compass. The northern edge of Robben Island bears 297°C . The southern edge of the island bears 234°C . Plot your position. What is your latitude and longitude?

TIDAL STREAM VECTORS WITHOUT LEEWAY

17. You want to achieve a COG of 120°T . You have a current setting of 270°T at 3 knots. You can sail at 7 knots. What is your true CTS and your expected SOG?
18. Your heading on your steering compass is 190°C . Your log reads 4 knots. However your GPS says you are heading 160°T at 2 knots. What is the set and rate of the current? Your steering compass has no deviation. Variation is 24°W .
19. You are sailing 340°T at 6 knots. You have a current setting of 350°T at 2 knots. What is your COG and SOG?
20. Your heading on your steering compass is 217°C . Your log reads 6 knots. However your GPS says you are heading 237°M at 5 knots. What is the set and rate of the current? Your steering compass has no deviation. Variation is 24° .
21. You are sailing 280°T at 5 knots. You have a current setting 070°T at 2 knots. What is your COG and SOG?
22. You want to achieve a COG of 080°T . You have a current setting 200°T at 2 knots. You can sail at 6 knots. What is your true CTS and your expected SOG?

TIDAL STREAM VECTORS WITH LEEWAY

23. Your helmsman is sailing 065°T at 4.4 knots. There is a strong South Easterly wind and you estimate your leeway to be 15°. You have a current setting 280°T at 1.9 knots. What is your COG and SOG?
24. You want to achieve a COG of 125°T. You have a current setting 280°T at 1.8 knots. You can sail at 6.5 knots. You will be sailing close hauled on a port tack and you expect your leeway to be about 10°. What is your true CTS and your expected SOG?
25. Your helmsman is steering 095°C on your steering compass which has zero deviation. Your log reads 6 knots. There is a strong wind and sea coming from the SE and you estimate your leeway to be 15°C. Your GPS says you are heading 063°M at 5 knots. What is the set and rate of the current? Variation is 24°W.
26. You are sailing 110°T at 5 knots. There is a strong North wind and you estimate your leeway to be 15°. You have a current setting of 350°T at 2 knots. What is your true COG and SOG?
27. You want to achieve a COG of 220°T. You have a current setting 320°T at 2 knots. You can sail at 6 knots. You will be reaching on a port tack and you expect your leeway to be about 10°. What is your true CTS and your expected SOG?
28. Your helmsman is steering 280°C on your steering compass which has zero deviation. Your log reads 6 knots. There is a strong wind and sea coming from the SSW and you estimate your leeway to be 10°. Your GPS says you are heading 273°M at 5.5 knots. What is the set and rate of the current? Variation is 24°W.
29. Your helmsman is sailing 050°T at 5 knots. There is a strong North wind and you estimate your leeway to be 15°. You have a current setting 350°T at 2 knots. What is your true COG and SOG?
30. You want to achieve a COG of 160°T. You have a current setting 240°T at 2 knots. You can sail at 6 knots. You will be sailing close hauled on a starboard tack and you expect your leeway to be about 10. What is your true CTS and your expected SOG?
31. Your helmsman is steering 110°T. Your log reads 6 knots. There is a strong wind and sea coming from the SSW and you estimate your leeway to be 10°. Your GPS says you are heading 088°T at 4.6 knots. What is the set and rate of the current?
32. Your helmsman is sailing 310°T at 4.8 knots. There is a strong North wind and you estimate your leeway to be 15°. You have a current setting 080°T at 2.2 knots. What is your COG and SOG?
33. You want to achieve a COG of 210°T. You have a current setting 240°T at 3 knots. You can sail at 4 knots. You will be reaching on a starboard tack and you expect your leeway to be about 10°. What is your true CTS and your expected SOG?
34. Your helmsman is sailing 275°T at 6 knots. There is a strong north wind and you estimate your leeway to be 15°. You have a current setting 065°T at 2.7 knots. What is your COG and SOG?
35. You want to achieve a COG of 305°T. You have a current setting 075°T at 2.6 knots. You can sail at 7 knots. You will be sailing close hauled on a port tack and you expect your leeway to be about 10°. What is your true CTS and your expected SOG?
36. Your helmsman is sailing 045°T at 5 knots. There is a light SE wind and you estimate your leeway to be 5°. You have a current setting 340°T at 2 knots. What is your COG and SOG?
37. You want to achieve a COG of 160°T. You have a current setting 280°T at 2.2 knots. You can sail at 6 knots. You will be beating on a port tack and you expect your leeway to be about 15°. What is your true CTS and your expected SOG?

38. Your helmsman is sailing 220°T at 6 knots. There is a NW wind and you estimate your leeway to be 10°. You have a current setting 340°T at 3.3 knots. What is your COG and SOG?
39. You want to achieve a COG of 040°T. You have a current setting 260°T at 2.7 knots. You can sail at 7 knots. You will be sailing close hauled on a starboard tack and you expect your leeway to be about 15°. What is your true CTS and your expected SOG?
40. Your helmsman is steering 080°T. Your log reads 4 knots. There is a strong wind and sea coming from the SE and you estimate your leeway to be 15°. Your GPS says you are heading 050°T at 5.7 knots. What is the set and rate of the current?
41. You are sailing 350°T at 5.6 knots. There is a strong West wind and you estimate your leeway to be 15°. You have a current setting 120°T at 2.2 knots. What is your COG and SOG?
42. You want to achieve a COG of 215°T. You have a current setting 075°T at 2.2 knots. You can sail at 6 knots. You will be sailing close hauled on a port tack and you expect your leeway to be about 10°. What is your true CTS and your expected SOG?

DR AND EP'S

43. Leaving Cape Town you pass the breakwater light at 0400 hours. You sail 330°C on your steering compass for one hour at 5 knots. At 0500 you change course to 240°C and you speed increases to 6 knots. Plot your DR at 0600. What is your latitude and longitude?
44. At 1500 you fix your position at 34° 10.0'S 018° 31.0'E. Your log reads 103.7 nm. You are sailing 110°C on your steering compass into a SE wind and you estimate your leeway to be 10°. At 1600 your log reads 109.6 nm. Plot your EP at 1600. What is your latitude and longitude? Deviate card No1 applies to your steering compass.

TIDES AND THE RULE OF TWELFTHS

45. Your boat has a draft of 1.9m. There is a bar at the mouth of your marina with a charted depth of 0.9m. If you want a clearance of 0.5m, what is the earliest time you can enter the marina after the 1210 low tide, given the following tide table?

LT 1210 0.72m

HT 1822 3.12m

What is the depth over the bar at 1600?

46. Your boat has a draft of 2.4m. The entrance to your marina with a charted depth of 1.6m. If you want a clearance of 0.5m, what is the earliest time you can enter the marina after the 0730 low tide, given the following tide table?

LT 0730 0.3m

HT 1342 2.7m

What is the depth at the entrance at 1200?

47. Your tide table give you the following information:

HT 0811 2.06m

LT 1417 0.38m

What will the height of the tide be at 1100? When will the tide be 1.7m (new)



GENERAL

48. Deviation card No1 applies to your steering compass.
1. You are sailing 340°C on your steering compass. At 1100 your log reads 11.3nm and you fix your position using your hand bearing compass:
Hangklip light bear 120°C
Klein Hangklip bear 071°C
Plot your fix. What is your position?
 2. You decide to change course to get to the waypoint A at 34° 11'S and 18° 48'E. What is your compass course to steer? What is your ETA at A assuming a speed of 8 knots?
 3. At 1130 you fix your position by GPS at 34° 18.0'S and 18° 43.5'E and your log reads 15.7nm. What has the set, drift and rate of the current been since 1100?
 4. You still want to get to your waypoint A. What is your CTS assuming the current remains the same? What is your expected SOG and your ETA at A, assuming your speed through the water will be 10 knots.
49. Deviation card no 1 applies to your ships steering compass.
1. You are sailing 170°C. At 1100 Robben Island light bears 122°C and Green Point light bears 172°C, both taken on your hand held compass. Plot your fix. What is your position?
 2. You decide to change course to get to the waypoint A which is 4 nm due West of Karbonkelberg peak. Your speed is 9 knots. What is your compass course to steer? What is your ETA at A?
 3. At 1140 you fix your position by GPS at 33° 53.0'S and 18° 16.2'E. What has the set, drift and ate of the current been since 1100?
 4. What is your CTS to get to waypoint A, assuming the current remains the same and your speed through the water remains 9 knots? What is your expected SOG?
50. You have zero deviation on your steering compass.
1. You are sailing 240°C on your steering compass. At 1100 you zero your log and fix your position with a bearing of 075°C taken on your hand held compass and a radar range of 7.2 nm on Cape Point light. Plot your fix. What is your position?
 2. You immediately decide to change course to get to waypoint A which is 34° 10'S and 18° 14'E. Assuming a speed of 11 knots, what is your compass CTS and your ETA at A?
 3. At 1140 your log reads 7.4 nm and you fix your position with your hand held compass. The radio mast at Die Eiland bears 045°C and the wreck at Hoek van Bobbejaans bears 111°C. What has the set, drift and rate of the current been since 1100?
 4. You still want to get to waypoint A. Assuming the current remains the same and your speed through the water of 9 knots, what is your compass CTS, your expected SOG and your ETA at A?