



**SAMPLE COASTAL SKIPPER CHARTWORK ANSWERS**

1. Course 048°M. Distance 8.9nm. Time =  $8.9/7 \times 60 = 76$ min
2. Course 301°T. Distance 8.1nm. Time =  $8.1/6 \times 60 = 81$ min
3. CTS = 280°T Distance to intercept = 8.6nm Time to intercept =  $8.6/4.2 \times 60 = 123$ min = 2h03m
4. CTS = 010° Distance to intercept = 9.2nm Time to intercept =  $9.2/11 \times 60 = 50$ min
5. CTS = 108° Time =  $9.6/6$ hrs = 96 min = 1h36.
6. Distance sailed 1.6M Position 34° 14.1'S and 018° 36.0E
7. Distance sailed 5.6M Position 34° 26.0'S and 018° 33.6E
8. Distance sailed 4.1M. Position 34° 04.4'S and 018° 14.9'E
9. Distance sailed 3.6M. Position 34° 10.2'S and 018° 14.7'E
10. Position 34° 09.7'S and 018° 29, 5'E
11. Navigator A = 8.1 nm off. Navigator B = 4.1 nm off
12. Position 34° 20.8'S and 018° 32.0'E
13. Navigator A = 6.0nm Navigator B = 3.0 nm
14. Navigator A = 5.1 nm off Navigator B = 2.9 nm off
15. Navigator A 8 miles off. Navigator B 4 miles off
16. Dist = 18.0nm. Position 34° 05.0'S and 018° 12.8'E
17. Dist =  $2.08 \times (\sqrt{3} + \sqrt{34}) = 15.7$ nm. Position 34° 28.2'S and 018° 31.7'E
18. Slangkop = 027°C - 24°W = 003T. Range =  $2.8 \times (\sqrt{41} + \sqrt{3}) = 16.9$ nm.  
Position 34° 25.85'S and 018° 18.2'E
19. Range =  $2.08 \times (\sqrt{28} + \sqrt{3}) = 14.6$ M. And 131°C - 24°W = 107°T  
Position 33° 48.6'S and 018° 12.6'E
20. Latest time = 1512. See worked example.



21. Depth required = 1.6 + 0.5 2.1. Charted depth = 0.9m So tide required = 1.2m:

0900	33
1002	46
1104	72
1206	111
1308	150
1410	176
1512	189

Earliest time = 1206 + 62 x 9/39 = 1206 + 14m = 1220

22. From your tide table: At 1200 you have 85 + 42\* (11/69) = 85 + 7 = 92 cm of tide.

For 1.8m of tide, the time = 1407 + 69° (11/28) = 1407 + 27 1434

0931	43
1040	57
1149	85
1258	127
1407	169
1516	197
1625	211

23. a. At 315°C dev = 4E Var = 24W Total compass error = 20W. Come = 295° T

C	046	089	Add East
Variation	24W	24W	
T	022	065	

Position 34° 24.1S and 18° 22.8E

b. CTS = 339T 24W = 003M - 8E = 55C. Distance = 16.3nm. Time = 16.3/9 1h49m. ETA = 1319.

c. Log = 13.4 - 4.4 = 9.0nm Set = 263T Drift = 2.6nm Rate = 2.6knots

d. CTS = 038T + 24W = 061M - 3E = 058C. SOG = 3.7 x 2 = 7.4 knots.

24. a. Position 34° 12.7'S and 18° 46.7'E

b. CTS = 222°M. Distance = 18.1 ETA 18.1/8 = 2.26h = 2h 0.26 x 60m = 2h 16m = 13h16

c. Set = 115°T. Drift = 1.6nm Rate = 3.2 knots

d. CTS = 275°C SOG = 3.1 x 2 = 6.2 knots



25. a. At 230°C dev = 4W. Course = 230C - 4W = 226M - 24W = 202T

C	138	086	Add East
Variation	24W	24W	
T	114	062	

Position 34° 13.5S and 18° 44.9E

b. CTS = 168T + 24W = 192M + 6W = 198C. Distance = 9.8nm. time = 9.8/6=1h38m. ETA=0938.

c. Log = 6.3 - 3.2 = 3.1nm Set = 251T Drift= 1.5nm Rate = 3.0knots

d. CTS = 125T + 24W = 149M + 6W = 155C. SOG=4.9 knots  
Time = 6.7/4.9 = 1h22 ETA = 0830 + 1h22= 0952

26. a. AT 170°C dev = 7W Var = 24W Total compass error = 31W. Course 139°T

C	239	309	Add East
Total compass error(handheld)	24W	24W	
T	215	285	

Your Position 34° 11.6'S 18° 31.0'E

b. CTS = 168T + 24W = 192M + 6W = 198C. Distance = 10.0nm. Time= 10.0/6 = 1h40m. ETA = 2140.

c. Log = 13.0 - 9.9 = 3.1nm Set = 251T drift 1.4nm Rate = 2.8kknobs

d. CTS = 131T + 24W = 155 + 6W = 161C. SOG = 5.2 knots . Time = 6.9/5.2 = 1h20m  
ETA = 2150

27. a. Expected deviation in 2020 = 23° 32' + 21 x 2' = 24° 14'

b. Yes you can plot directly - because it says so. The horizontal datum is the Clarke 1880 Spheroid.

c. Set = 317°T and rate = 0,2 knots

28. Charted depth 3,9m. At MLWN depth 3.9 + 0.7 = 4.6m

29. Two different situations

a. Add East

c	033	137	232
d	6E	6E	6E
m	039	143	238
v	24W	24W	24W
t	015	015	214

b. Add East



c	033	137	232
d	5E	4E	3E
m	038	133	229
v	24W	24W	24W
t	014	109	205

30. Two different situations

a. Add East

c	082	193	317
d	7W	7W	7W
m	075	186	310
v	24W	24W	24W
t	051	162	286

b. Add East

c	082	193	317
d	1E	7W	4E
m	083	186	321
v	24W	24W	24W
t	059	162	297

**Worked example: Question 20**

Draft	2.1
Plus required clearance	0.5
Required depth	2.6
Less charted depth	1.6
Required tide	1.0

Tidal interval = 7h 12m = 432m

Tidal hour =  $432 / 6 = 72\text{m} = 1\text{ h } 12\text{m}$

Tidal range = 3.6m

One twelfth = 0.3m



Using the rule of twelfths :

1000	3.9
1112	3.6
1224	3.0
1336	2.1
1448	1.2
1600	0.6
1712	0.3

Last time by calculation =  $1448 + 72 \times (0.2/0.6) = 1448 + 24 = 1512$

For those who are not comfortable with interpolating by calculation, using a rough graph drawn by hand to interpolate is more than adequate

### **SOUTH AFRICAN TIDAL CALCULATIONS**

1. Clearance 0.31m.
  2. Rule of twelfths = 0.85m
- Hourly tide tables = 0.84m

### **NEW ZEALAND TIDAL CALCULATIONS**

3. Earliest time for a clearance of 0.5m ~ 1841 hours.
4. Earliest time for a clearance of 0.5m ~ 0902 hours.
5. Latest time for a clearance of 0.5m ~ 1934 hours.

### **ADMIRALTY TIDAL CALCULATIONS**

6. Latest time for a clearance of 0.5m ~ 1537 hours.
7. Latest time for a clearance of 0.5m ~ 1147 hours .
8. Earliest time for a clearance of 0.5m ~ 1234 hours

### **PLOTTING AND SHAPING COURSE IN TIDAL STREAMS (FALSE BAY AND ENGLISH CHANNEL)**

9. CTS = 119°C. ETA = 1242 hours.
10. CTS = 100°C. ETA = 1446 hours.
11. CTS = 204°T +5° leeway = 209°T +3° = 212°C. ETA = 2000 hours.
12. CTS = 034°C. ETA = 1930 hours.

### **FIX BY MERIDIAN PASSAGE**

13. 14° 29.5'S 028° 15'W
14. 24° 42.1'N 120° 45'W
15. 21° 17.1'S 104° 44'E
16. 14° 08.6'N 059° 17'E
17. 03° 48.8'N 060° 30'E
18. 35° 18.0'S 031° 52'W
19. 08° 41.8'N 151° 00'W
20. 01° 39.0'S 090° 47'E



