TABLE 8

Conversion Table for Meters, Feet, and Fathoms

Meters	Feet	Fathoms	Meters	Feet	Fathoms	Feet	Meters	Feet	Meters	Fathoms	Meters	Fathoms	Meters
1	3.28	0.55	61	200.13	33.36	1	0.30	61	18.59	1	1.83	61	111.56
2	6.56	1.09	62	203.41	33.90	2	0.61	62	18.90	2	3.66	62	113.39
3	9.84	1.64	63	206.69	34.45	3	0.91	63	19.20	3	5.49	63	115.21
4	13.12	2.19	64	209.97	35.00	4	1.22	64	19.51	4	7.32	64	117.04
5	16.40	2.73	65	213.25	35.54	5	1.52	65	19.81	5	9.14	65	118.87
6	19.69	3.28	66	216.54	36.09	6	1.83	66	20.12	6	10.97	66	120.70
7	22.97	3.83	67	219.82	36.64	7	2.13	67	20.42	7	12.80	67	122.53
8	26.25	4.37	68	223.10	37.18	8	2.44	68	20.73	8	14.63	68	124.36
9	29.53	4.92	69	226.38	37.73	9	2.74	69	21.03	9	16.46	69	126.19
10	32.81	5.47	70	229.66	38.28	10	3.05	70	21.34	10	18.29	70	128.02
11	36.09	6.01	71	232.94	38.82	11	3.35	71	21.64	11	20.12	71	129.84
12	39.37	6.56	72	236.22	39.37	12	3.66	72	21.95	12	21.95	72	131.67
13	42.65	7.11	73	239.50	39.92	13	3.96	73	22.25	13	23.77	73	133.50
14	45.93	7.66	74	242.78	40.46	14	4.27	74	22.56	14	25.60	74	135.33
15	49.21	8.20	75	246.06	41.01	15	4.57	75	22.86	15	27.43	75	137.16
16	52.49	8.75	76	249.34	41.56	16	4.88	76	23.16	16	29.26	76	138.99
17	55.77	9.30	77	252.62	42.10	17	5.18	77	23.47	17	31.09	77	140.82
18	59.06	9.84	78	255.91	42.65	18	5.49	78	23.77	18	32.92	78	142.65
19	62.34	10.39	79	259.19	43.20	19	5.79	79	24.08	19	34.75	79	144.48
20	65.62	10.94	80	262.47	43.74	20	6.10	80	24.38	20	36.58	80	146.30
21	68.90	11.48	81	265.75	44.29	21	6.40	81	24.69	21	38.40	81	148.13
22	72.18	12.03	82	269.03	44.84	22	6.71	82	24.99	22	40.23	82	149.96
23	75.46	12.58	83	272.31	45.38	23	7.01	83	25.30	23	42.06	83	151.79
24	78.74	13.12	84	275.59	45.93	24	7.32	84	25.60	24	43.89	84	153.62
25	82.02	13.67	85	278.87	46.48	25	7.62	85	25.91	25	45.72	85	155.45
26	85.30	14.22	86	282.15	47.03	26	7.92	86	26.21	26	47.55	86	157.28
27	88.58	14.76	87	285.43	47.57	27	8.23	87	26.52	27	49.38	87	159.11
28	91.86	15.31	88	288.71	48.12	28	8.53	88	26.82	28	51.21	88	160.93
29	95.14	15.86	89	291.99	48.67	29	8.84	89	27.13	29	53.04	89	162.76
30	98.43	16.40	90	295.28	49.21	30	9.14	90	27.43	30	54.86	90	164.59
31	101.71	16.95	91	298.56	49.76	31	9.45	91	27.74	31	56.69	91	166.42
32	104.99	17.50	92	301.84	50.31	32	9.75	92	28.04	32	58.52	92	168.25
33	108.27	18.04	93	305.12	50.85	33	10.06	93	28.35	33	60.35	93	170.08
34	111.55	18.59	94	308.40	51.40	34	10.36	94	28.65	34	62.18	94	171.91
35	114.83	19.14	95	311.68	51.95	35	10.67	95	28.96	35	64.01	95	173.74
36	118.11	19.69	96	314.96	52.49	36	10.97	96	29.26	36	65.84	96	175.56
37	121.39	20.23	97	318.24	53.04	37	11.28	97	29.57	37	67.67	97	177.39
38	124.67	20.78	98	321.52	53.59	38	11.58	98	29.87	38	69.49	98	179.22
39	127.95	21.33	99	324.80	54.13	39	11.89	99	30.18	39	71.32	99	181.05
40	131.23	21.87	100	328.08	54.68	40	12.19	100	30.48	40	73.15	100	182.88
41	134.51	22.42	101	331.36	55.23	41	12.50	101	30.78	41	74.98	101	184.71
42	137.80	22.97	102	334.65	55.77	42	12.80	102	31.09	42	76.81	102	186.54
43	141.08	23.51	103	337.93	56.32	43	13.11	103	31.39	43	78.64	103	188.37
44	144.36	24.06	104	341.21	56.87	44	13.41	104	31.70	44	80.47	104	190.20
45	147.64	24.61	105	344.49	57.41	45	13.72	105	32.00	45	82.30	105	192.02
46	150.92	25.15	106	347.77	57.96	46	14.02	106	32.31	46	84.12	106	193.85
47	154.20	25.70	107	351.05	58.51	47	14.33	107	32.61	47	85.95	107	195.68
48	157.48	26.25	108	354.33	59.06	48	14.63	108	32.92	48	87.78	108	197.51
49	160.76	26.79	109	357.61	59.60	49	14.94	109	33.22	49	89.61	109	199.34
50	164.04	27.34	110	360.89	60.15	50	15.24	110	33.53	50	91.44	110	201.17
51	167.32	27.89	111	364.17	60.70	51	15.54	111	33.83	51	93.27	111	203.00
52	170.60	28.43	112	367.45	61.24	52	15.85	112	34.14	52	95.10	112	204.83
53	173.88	28.98	113	370.73	61.79	53	16.15	113	34.44	53	96.93	113	206.65
54	177.17	29.53	114	374.02	62.34	54	16.46	114	34.75	54	98.76	114	208.48
55	180.45	30.07	115	377.30	62.88	55	16.76	115	35.05	55	100.58	115	210.31
56	183.73	30.62	116	380.58	63.43	56	17.07	116	35.36	56	102.41	116	212.14
57	187.01	31.17	117	383.86	63.98	57	17.37	117	35.66	57	104.24	117	213.97
58	190.29	31.71	118	387.14	64.52	58	17.68	118	35.97	58	106.07	118	215.80
59	193.57	32.26	119	390.42	65.07	59	17.98	119	36.27	59	107.90	119	217.63
60	196.85	32.81	120	393.70	65.62	60	18.29	120	36.58	60	109.73	120	219.46

TABLE 9

Conversion Table for Nautical and Statute Miles

1 nautical mile = 6,076.11548 . . . feet

1 statute mile = 5,280 feet

Nautical miles to statute miles				Statute miles to nautical miles			
Nautical miles	Statute miles	Nautical miles	Statute miles	Statute miles	Nautical miles	Statute miles	Nautical miles
1	1. 151	51	58. 690	1	0. 869	51	44. 318
2	2. 302	52	59. 841	2	1. 738	52	45. 187
3	3. 452	53	60. 991	3	2. 607	53	46. 056
4	4. 603	54	62. 142	4	3. 476	54	46. 925
5	5. 754	55	63. 293	5	4. 345	55	47. 794
6	6. 905	56	64. 444	6	5. 214	56	48. 663
7	8. 055	57	65. 594	7	6. 083	57	49. 532
8	9. 206	58	66. 745	8	6. 952	58	50. 401
9	10. 357	59	67. 896	9	7. 821	59	51. 270
10	11. 508	60	69. 047	10	8. 690	60	52. 139
11	12. 659	61	70. 198	11	9. 559	61	53. 008
12	13. 809	62	71. 348	12	10. 428	62	53. 877
13	14. 960	63	72. 499	13	11. 297	63	54. 746
14	16. 111	64	73. 650	14	12. 166	64	55. 614
15	17. 262	65	74. 801	15	13. 035	65	56. 483
16	18. 412	66	75. 951	16	13. 904	66	57. 352
17	19. 563	67	77. 102	17	14. 773	67	58. 221
18	20. 714	68	78. 253	18	15. 642	68	59. 090
19	21. 865	69	79. 404	19	16. 511	69	59. 959
20	23. 016	70	80. 555	20	17. 380	70	60. 828
21	24. 166	71	81. 705	21	18. 249	71	61. 697
22	25. 317	72	82. 856	22	19. 117	72	62. 566
23	26. 468	73	84. 007	23	19. 986	73	63. 435
24	27. 619	74	85. 158	24	20. 855	74	64. 304
25	28. 769	75	86. 308	25	21. 724	75	65. 173
26	29. 920	76	87. 459	26	22. 593	76	66. 042
27	31. 071	77	88. 610	27	23. 462	77	66. 911
28	32. 222	78	89. 761	28	24. 331	78	67. 780
29	33. 373	79	90. 912	29	25. 200	79	68. 649
30	34. 523	80	92. 062	30	26. 069	80	69. 518
31	35. 674	81	93. 213	31	26. 938	81	70. 387
32	36. 825	82	94. 364	32	27. 807	82	71. 256
33	37. 976	83	95. 515	33	28. 676	83	72. 125
34	39. 127	84	96. 665	34	29. 545	84	72. 994
35	40. 277	85	97. 816	35	30. 414	85	73. 863
36	41. 428	86	98. 967	36	31. 283	86	74. 732
37	42. 579	87	100. 118	37	32. 152	87	75. 601
38	43. 730	88	101. 269	38	33. 021	88	76. 470
39	44. 880	89	102. 419	39	33. 890	89	77. 339
40	46. 031	90	103. 570	40	34. 759	90	78. 208
41	47. 182	91	104. 721	41	35. 628	91	79. 077
42	48. 333	92	105. 872	42	36. 497	92	79. 946
43	49. 484	93	107. 022	43	37. 366	93	80. 815
44	50. 634	94	108. 173	44	38. 235	94	81. 684
45	51. 785	95	109. 324	45	39. 104	95	82. 553
46	52. 936	96	110. 475	46	39. 973	96	83. 422
47	54. 087	97	111. 626	47	40. 842	97	84. 291
48	55. 237	98	112. 776	48	41. 711	98	85. 160
49	56. 388	99	113. 927	49	42. 580	99	86. 029
50	57. 539	100	115. 078	50	43. 449	100	86. 898

TABLE 10

Speed Table for Measured Mile

Sec.	Minutes												Sec.
	1	2	3	4	5	6	7	8	9	10	11	12	
	Knots	*Knots*	*Knots*	*Knots*	*Knots*	*Knots*	*Knots*	*Knots*	*Knots*	*Knots*	*Knots*	*Knots*	
0	60. 000	30. 000	20. 000	15. 000	12. 000	10. 000	8. 571	7. 500	6. 667	6. 000	5. 455	5. 000	0
1	59. 016	29. 752	19. 890	14. 938	11. 960	9. 972	8. 551	7. 484	6. 654	5. 990	5. 446	4. 993	1
2	58. 065	29. 508	19. 780	14. 876	11. 921	9. 945	8. 531	7. 469	6. 642	5. 980	5. 438	4. 986	2
3	57. 143	29. 268	19. 672	14. 815	11. 881	9. 917	8. 511	7. 453	6. 630	5. 970	5. 430	4. 979	3
4	56. 250	29. 032	19. 565	14. 754	11. 842	9. 890	8. 491	7. 438	6. 618	5. 960	5. 422	4. 972	4
5	55. 385	28. 800	19. 459	14. 694	11. 803	9. 863	8. 471	7. 423	6. 606	5. 950	5. 414	4. 966	5
6	54. 545	28. 571	19. 355	14. 634	11. 765	9. 836	8. 451	7. 407	6. 593	5. 941	5. 405	4. 959	6
7	53. 731	28. 346	19. 251	14. 575	11. 726	9. 809	8. 431	7. 392	6. 581	5. 931	5. 397	4. 952	7
8	52. 941	28. 125	19. 149	14. 516	11. 688	9. 783	8. 411	7. 377	6. 569	5. 921	5. 389	4. 945	8
9	52. 174	27. 907	19. 048	14. 458	11. 650	9. 756	8. 392	7. 362	6. 557	5. 911	5. 381	4. 938	9
10	51. 429	27. 692	18. 947	14. 400	11. 613	9. 730	8. 372	7. 347	6. 545	5. 902	5. 373	4. 932	10
11	50. 704	27. 481	18. 848	14. 343	11. 576	9. 704	8. 353	7. 332	6. 534	5. 892	5. 365	4. 925	11
12	50. 000	27. 273	18. 750	14. 286	11. 538	9. 677	8. 333	7. 317	6. 522	5. 882	5. 357	4. 918	12
13	49. 315	27. 068	18. 653	14. 229	11. 502	9. 651	8. 314	7. 302	6. 510	5. 873	5. 349	4. 911	13
14	48. 649	26. 866	18. 557	14. 173	11. 465	9. 626	8. 295	7. 287	6. 498	5. 863	5. 341	4. 905	14
15	48. 000	26. 667	18. 462	14. 118	11. 429	9. 600	8. 276	7. 273	6. 486	5. 854	5. 333	4. 898	15
16	47. 368	26. 471	18. 367	14. 062	11. 392	9. 574	8. 257	7. 258	6. 475	5. 844	5. 325	4. 891	16
17	46. 753	26. 277	18. 274	14. 008	11. 356	9. 549	8. 238	7. 243	6. 463	5. 835	5. 318	4. 885	17
18	46. 154	26. 087	18. 182	13. 953	11. 321	9. 524	8. 219	7. 229	6. 452	5. 825	5. 310	4. 878	18
19	45. 570	25. 899	18. 090	13. 900	11. 285	9. 499	8. 200	7. 214	6. 440	5. 816	5. 302	4. 871	19
20	45. 000	25. 714	18. 000	13. 846	11. 250	9. 474	8. 182	7. 200	6. 429	5. 806	5. 294	4. 865	20
21	44. 444	25. 532	17. 910	13. 793	11. 215	9. 449	8. 163	7. 186	6. 417	5. 797	5. 286	4. 858	21
22	43. 902	25. 352	17. 822	13. 740	11. 180	9. 424	8. 145	7. 171	6. 406	5. 788	5. 279	4. 852	22
23	43. 373	25. 175	17. 734	13. 688	11. 146	9. 399	8. 126	7. 157	6. 394	5. 778	5. 271	4. 845	23
24	42. 857	25. 000	17. 647	13. 636	11. 111	9. 375	8. 108	7. 143	6. 383	5. 769	5. 263	4. 839	24
25	42. 353	24. 828	17. 561	13. 585	11. 077	9. 351	8. 090	7. 129	6. 372	5. 760	5. 255	4. 832	25
26	41. 860	24. 658	17. 476	13. 534	11. 043	9. 326	8. 072	7. 115	6. 360	5. 751	5. 248	4. 826	26
27	41. 379	24. 490	17. 391	13. 483	11. 009	9. 302	8. 054	7. 101	6. 349	5. 742	5. 240	4. 819	27
28	40. 909	24. 324	17. 308	13. 433	10. 976	9. 278	8. 036	7. 087	6. 338	5. 732	5. 233	4. 813	28
29	40. 449	24. 161	17. 225	13. 383	10. 942	9. 254	8. 018	7. 073	6. 327	5. 723	5. 225	4. 806	29
30	40. 000	24. 000	17. 143	13. 333	10. 909	9. 231	8. 000	7. 059	6. 316	5. 714	5. 217	4. 800	30
31	39. 560	23. 841	17. 062	13. 284	10. 876	9. 207	7. 982	7. 045	6. 305	5. 705	5. 210	4. 794	31
32	39. 130	23. 684	16. 981	13. 235	10. 843	9. 184	7. 965	7. 031	6. 294	5. 696	5. 202	4. 787	32
33	38. 710	23. 529	16. 901	13. 187	10. 811	9. 160	7. 947	7. 018	6. 283	5. 687	5. 195	4. 781	33
34	38. 298	23. 377	16. 822	13. 139	10. 778	9. 137	7. 930	7. 004	6. 272	5. 678	5. 187	4. 775	34
35	37. 895	23. 226	16. 744	13. 091	10. 746	9. 114	7. 912	6. 990	6. 261	5. 669	5. 180	4. 768	35
36	37. 500	23. 077	16. 667	13. 043	10. 714	9. 091	7. 895	6. 977	6. 250	5. 660	5. 172	4. 762	36
37	37. 113	22. 930	16. 590	12. 996	10. 682	9. 068	7. 877	6. 963	6. 239	5. 651	5. 165	4. 756	37
38	36. 735	22. 785	16. 514	12. 950	10. 651	9. 045	7. 860	6. 950	6. 228	5. 643	5. 158	4. 749	38
39	36. 364	22. 642	16. 438	12. 903	10. 619	9. 023	7. 843	6. 936	6. 218	5. 634	5. 150	4. 743	39
40	36. 000	22. 500	16. 364	12. 857	10. 588	9. 000	7. 826	6. 923	6. 207	5. 625	5. 143	4. 737	40
41	35. 644	22. 360	16. 290	12. 811	10. 557	8. 978	7. 809	6. 910	6. 196	5. 616	5. 136	4. 731	41
42	35. 294	22. 222	16. 216	12. 766	10. 526	8. 955	7. 792	6. 897	6. 186	5. 607	5. 128	4. 724	42
43	34. 951	22. 086	16. 143	12. 721	10. 496	8. 933	7. 775	6. 883	6. 175	5. 599	5. 121	4. 718	43
44	34. 615	21. 951	16. 071	12. 676	10. 465	8. 911	7. 759	6. 870	6. 164	5. 590	5. 114	4. 712	44
45	34. 286	21. 818	16. 000	12. 632	10. 435	8. 889	7. 742	6. 857	6. 154	5. 581	5. 106	4. 706	45
46	33. 962	21. 687	15. 929	12. 587	10. 405	8. 867	7. 725	6. 844	6. 143	5. 573	5. 099	4. 700	46
47	33. 645	21. 557	15. 859	12. 544	10. 375	8. 845	7. 709	6. 831	6. 133	5. 564	5. 092	4. 694	47
48	33. 333	21. 429	15. 789	12. 500	10. 345	8. 824	7. 692	6. 818	6. 122	5. 556	5. 085	4. 688	48
49	33. 028	21. 302	15. 721	12. 457	10. 315	8. 802	7. 676	6. 805	6. 112	5. 547	5. 078	4. 681	49
50	32. 727	21. 176	15. 652	12. 414	10. 286	8. 780	7. 660	6. 792	6. 102	5. 538	5. 070	4. 675	50
51	32. 432	21. 053	15. 584	12. 371	10. 256	8. 759	7. 643	6. 780	6. 091	5. 530	5. 063	4. 669	51
52	32. 143	20. 930	15. 517	12. 329	10. 227	8. 738	7. 627	6. 767	6. 081	5. 521	5. 056	4. 663	52
53	31. 858	20. 809	15. 451	12. 287	10. 198	8. 717	7. 611	6. 754	6. 071	5. 513	5. 049	4. 657	53
54	31. 579	20. 690	15. 385	12. 245	10. 169	8. 696	7. 595	6. 742	6. 061	5. 505	5. 042	4. 651	54
55	31. 304	20. 571	15. 319	12. 203	10. 141	8. 675	7. 579	6. 729	6. 050	5. 496	5. 035	4. 645	55
56	31. 034	20. 455	15. 254	12. 162	10. 112	8. 654	7. 563	6. 716	6. 040	5. 488	5. 028	4. 639	56
57	30. 769	20. 339	15. 190	12. 121	10. 084	8. 633	7. 547	6. 704	6. 030	5. 479	5. 021	4. 633	57
58	30. 508	20. 225	15. 126	12. 081	10. 056	8. 612	7. 531	6. 691	6. 020	5. 471	5. 014	4. 627	58
59	30. 252	20. 112	15. 063	12. 040	10. 028	8. 592	7. 516	6. 679	6. 010	5. 463	5. 007	4. 621	59
60	30. 000	20. 000	15. 000	12. 000	10. 000	8. 571	7. 500	6. 667	6. 000	5. 455	5. 000	4. 615	60
Sec.	1	2	3	4	5	6	7	8	9	10	11	12	Sec.

TABLE 11
Speed, Time, and Distance

Minutes	Speed in knots																Minutes
	0.5	1.0	1.5	2.0	2.5	3.0	3.5	4.0	4.5	5.0	5.5	6.0	6.5	7.0	7.5	8.0	
	Miles	*Miles*	*Miles*	*Miles*	*Miles*	*Miles*	*Miles*	*Miles*	*Miles*	*Miles*	*Miles*	*Miles*	*Miles*	*Miles*	*Miles*	*Miles*	
1	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	1
2	0.0	0.0	0.0	0.1	0.1	0.1	0.1	0.1	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.3	2
3	0.0	0.0	0.1	0.1	0.1	0.2	0.2	0.2	0.2	0.2	0.3	0.3	0.3	0.4	0.4	0.4	3
4	0.0	0.1	0.1	0.1	0.2	0.2	0.2	0.3	0.3	0.3	0.4	0.4	0.4	0.5	0.5	0.5	4
5	0.0	0.1	0.1	0.2	0.2	0.2	0.3	0.3	0.4	0.4	0.5	0.5	0.5	0.6	0.6	0.7	5
6	0.0	0.1	0.2	0.2	0.2	0.3	0.4	0.4	0.4	0.5	0.6	0.6	0.6	0.7	0.8	0.8	6
7	0.1	0.1	0.2	0.2	0.3	0.4	0.4	0.5	0.5	0.6	0.6	0.7	0.8	0.8	0.9	0.9	7
8	0.1	0.1	0.2	0.3	0.3	0.4	0.5	0.5	0.6	0.7	0.7	0.8	0.9	0.9	1.0	1.1	8
9	0.1	0.2	0.2	0.3	0.4	0.4	0.5	0.6	0.7	0.8	0.8	0.9	1.0	1.0	1.1	1.2	9
10	0.1	0.2	0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.8	0.9	1.0	1.1	1.2	1.2	1.3	10
11	0.1	0.2	0.3	0.4	0.5	0.6	0.6	0.7	0.8	0.9	1.0	1.1	1.2	1.3	1.4	1.5	11
12	0.1	0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9	1.0	1.1	1.2	1.3	1.4	1.5	1.6	12
13	0.1	0.2	0.3	0.4	0.5	0.6	0.8	0.9	1.0	1.1	1.2	1.3	1.4	1.5	1.6	1.7	13
14	0.1	0.2	0.4	0.5	0.6	0.7	0.8	0.9	1.0	1.2	1.3	1.4	1.5	1.6	1.8	1.9	14
15	0.1	0.2	0.4	0.5	0.6	0.8	0.9	1.0	1.1	1.2	1.4	1.5	1.6	1.8	1.9	2.0	15
16	0.1	0.3	0.4	0.5	0.7	0.8	0.9	1.1	1.2	1.3	1.5	1.6	1.7	1.9	2.0	2.1	16
17	0.1	0.3	0.4	0.6	0.7	0.8	1.0	1.1	1.3	1.4	1.6	1.7	1.8	2.0	2.1	2.3	17
18	0.2	0.3	0.4	0.6	0.8	0.9	1.0	1.2	1.4	1.5	1.6	1.8	2.0	2.1	2.2	2.4	18
19	0.2	0.3	0.5	0.6	0.8	1.0	1.1	1.3	1.4	1.6	1.7	1.9	2.1	2.2	2.4	2.5	19
20	0.2	0.3	0.5	0.7	0.8	1.0	1.2	1.3	1.5	1.7	1.8	2.0	2.2	2.3	2.5	2.7	20
21	0.2	0.4	0.5	0.7	0.9	1.0	1.2	1.4	1.6	1.8	1.9	2.1	2.3	2.4	2.6	2.8	21
22	0.2	0.4	0.6	0.7	0.9	1.1	1.3	1.5	1.6	1.8	2.0	2.2	2.4	2.6	2.8	2.9	22
23	0.2	0.4	0.6	0.8	1.0	1.2	1.3	1.5	1.7	1.9	2.1	2.3	2.5	2.7	2.9	3.1	23
24	0.2	0.4	0.6	0.8	1.0	1.2	1.4	1.6	1.8	2.0	2.2	2.4	2.6	2.8	3.0	3.2	24
25	0.2	0.4	0.6	0.8	1.0	1.2	1.5	1.7	1.9	2.1	2.3	2.5	2.7	2.9	3.1	3.3	25
26	0.2	0.4	0.6	0.9	1.1	1.3	1.5	1.7	2.0	2.2	2.4	2.6	2.8	3.0	3.2	3.5	26
27	0.2	0.4	0.7	0.9	1.1	1.4	1.6	1.8	2.0	2.2	2.5	2.7	2.9	3.2	3.4	3.6	27
28	0.2	0.5	0.7	0.9	1.2	1.4	1.6	1.9	2.1	2.3	2.6	2.8	3.0	3.3	3.5	3.7	28
29	0.2	0.5	0.7	1.0	1.2	1.4	1.7	1.9	2.2	2.4	2.7	2.9	3.1	3.4	3.6	3.9	29
30	0.2	0.5	0.8	1.0	1.2	1.5	1.8	2.0	2.2	2.5	2.8	3.0	3.2	3.5	3.8	4.0	30
31	0.3	0.5	0.8	1.0	1.3	1.6	1.8	2.1	2.3	2.6	2.8	3.1	3.4	3.6	3.9	4.1	31
32	0.3	0.5	0.8	1.1	1.3	1.6	1.9	2.1	2.4	2.7	2.9	3.2	3.5	3.7	4.0	4.3	32
33	0.3	0.6	0.8	1.1	1.4	1.6	1.9	2.2	2.5	2.8	3.0	3.3	3.6	3.8	4.1	4.4	33
34	0.3	0.6	0.8	1.1	1.4	1.7	2.0	2.3	2.6	2.8	3.1	3.4	3.7	4.0	4.2	4.5	34
35	0.3	0.6	0.9	1.2	1.5	1.8	2.0	2.3	2.6	2.9	3.2	3.5	3.8	4.1	4.4	4.7	35
36	0.3	0.6	0.9	1.2	1.5	1.8	2.1	2.4	2.7	3.0	3.3	3.6	3.9	4.2	4.5	4.8	36
37	0.3	0.6	0.9	1.2	1.5	1.8	2.2	2.5	2.8	3.1	3.4	3.7	4.0	4.3	4.6	4.9	37
38	0.3	0.6	1.0	1.3	1.6	1.9	2.2	2.5	2.8	3.2	3.5	3.8	4.1	4.4	4.8	5.1	38
39	0.3	0.6	1.0	1.3	1.6	2.0	2.3	2.6	2.9	3.2	3.6	3.9	4.2	4.6	4.9	5.2	39
40	0.3	0.7	1.0	1.3	1.7	2.0	2.3	2.7	3.0	3.3	3.7	4.0	4.3	4.7	5.0	5.3	40
41	0.3	0.7	1.0	1.4	1.7	2.0	2.4	2.7	3.1	3.4	3.8	4.1	4.4	4.8	5.1	5.5	41
42	0.4	0.7	1.0	1.4	1.8	2.1	2.4	2.8	3.2	3.5	3.8	4.2	4.6	4.9	5.2	5.6	42
43	0.4	0.7	1.1	1.4	1.8	2.2	2.5	2.9	3.2	3.6	3.9	4.3	4.7	5.0	5.4	5.7	43
44	0.4	0.7	1.1	1.5	1.8	2.2	2.6	2.9	3.3	3.7	4.0	4.4	4.8	5.1	5.5	5.9	44
45	0.4	0.8	1.1	1.5	1.9	2.2	2.6	3.0	3.4	3.8	4.1	4.5	4.9	5.2	5.6	6.0	45
46	0.4	0.8	1.2	1.5	1.9	2.3	2.7	3.1	3.4	3.8	4.2	4.6	5.0	5.4	5.8	6.1	46
47	0.4	0.8	1.2	1.6	2.0	2.4	2.7	3.1	3.5	3.9	4.3	4.7	5.1	5.5	5.9	6.3	47
48	0.4	0.8	1.2	1.6	2.0	2.4	2.8	3.2	3.6	4.0	4.4	4.8	5.2	5.6	6.0	6.4	48
49	0.4	0.8	1.2	1.6	2.0	2.4	2.9	3.3	3.7	4.1	4.5	4.9	5.3	5.7	6.1	6.5	49
50	0.4	0.8	1.2	1.7	2.1	2.5	2.9	3.3	3.8	4.2	4.6	5.0	5.4	5.8	6.2	6.7	50
51	0.4	0.8	1.3	1.7	2.1	2.6	3.0	3.4	3.8	4.2	4.7	5.1	5.5	6.0	6.4	6.8	51
52	0.4	0.9	1.3	1.7	2.2	2.6	3.0	3.5	3.9	4.3	4.8	5.2	5.6	6.1	6.5	6.9	52
53	0.4	0.9	1.3	1.8	2.2	2.6	3.1	3.5	4.0	4.4	4.9	5.3	5.7	6.2	6.6	7.1	53
54	0.4	0.9	1.4	1.8	2.2	2.7	3.2	3.6	4.1	4.5	5.0	5.4	5.8	6.3	6.8	7.2	54
55	0.5	0.9	1.4	1.8	2.3	2.8	3.2	3.7	4.1	4.6	5.0	5.5	6.0	6.4	6.9	7.3	55
56	0.5	0.9	1.4	1.9	2.3	2.8	3.3	3.7	4.2	4.7	5.1	5.6	6.1	6.5	7.0	7.5	56
57	0.5	1.0	1.4	1.9	2.4	2.8	3.3	3.8	4.3	4.8	5.2	5.7	6.2	6.6	7.1	7.6	57
58	0.5	1.0	1.4	1.9	2.4	2.9	3.4	3.9	4.4	4.8	5.3	5.8	6.3	6.8	7.2	7.7	58
59	0.5	1.0	1.5	2.0	2.5	3.0	3.4	3.9	4.4	4.9	5.4	5.9	6.4	6.9	7.4	7.9	59
60	0.5	1.0	1.5	2.0	2.5	3.0	3.5	4.0	4.5	5.0	5.5	6.0	6.5	7.0	7.5	8.0	60

TABLE 11
Speed, Time, and Distance

Minutes	Speed in knots																Minutes
	8.5	9.0	9.5	10.0	10.5	11.0	11.5	12.0	12.5	13.0	13.5	14.0	14.5	15.0	15.5	16.0	
	Miles	*Miles*	*Miles*	*Miles*	*Miles*	*Miles*	*Miles*	*Miles*	*Miles*	*Miles*	*Miles*	*Miles*	*Miles*	*Miles*	*Miles*	*Miles*	
1	0.1	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.3	0.3	1
2	0.3	0.3	0.3	0.3	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.5	0.5	0.5	0.5	0.5	2
3	0.4	0.4	0.5	0.5	0.5	0.6	0.6	0.6	0.6	0.6	0.7	0.7	0.7	0.8	0.8	0.8	3
4	0.6	0.6	0.6	0.7	0.7	0.7	0.8	0.8	0.8	0.9	0.9	0.9	1.0	1.0	1.0	1.1	4
5	0.7	0.8	0.8	0.8	0.9	0.9	1.0	1.0	1.0	1.1	1.1	1.2	1.2	1.2	1.3	1.3	5
6	0.9	0.9	1.0	1.0	1.0	1.1	1.2	1.2	1.2	1.3	1.4	1.4	1.4	1.5	1.6	1.6	6
7	1.0	1.0	1.1	1.2	1.2	1.3	1.3	1.4	1.5	1.5	1.6	1.6	1.7	1.8	1.8	1.9	7
8	1.1	1.2	1.3	1.3	1.4	1.5	1.5	1.6	1.7	1.7	1.8	1.9	1.9	2.0	2.1	2.1	8
9	1.3	1.4	1.4	1.5	1.6	1.6	1.7	1.8	1.9	2.0	2.0	2.1	2.2	2.2	2.3	2.4	9
10	1.4	1.5	1.6	1.7	1.8	1.8	1.9	2.0	2.1	2.2	2.2	2.3	2.4	2.5	2.6	2.7	10
11	1.6	1.6	1.7	1.8	1.9	2.0	2.1	2.2	2.3	2.4	2.5	2.6	2.7	2.8	2.8	2.9	11
12	1.7	1.8	1.9	2.0	2.1	2.2	2.3	2.4	2.5	2.6	2.7	2.8	2.9	3.0	3.1	3.2	12
13	1.8	2.0	2.1	2.2	2.3	2.4	2.5	2.6	2.7	2.8	2.9	3.0	3.1	3.2	3.4	3.5	13
14	2.0	2.1	2.2	2.3	2.4	2.6	2.7	2.8	2.9	3.0	3.2	3.3	3.4	3.5	3.6	3.7	14
15	2.1	2.2	2.4	2.5	2.6	2.8	2.9	3.0	3.1	3.2	3.4	3.5	3.6	3.8	3.9	4.0	15
16	2.3	2.4	2.5	2.7	2.8	2.9	3.1	3.2	3.3	3.5	3.6	3.7	3.9	4.0	4.1	4.3	16
17	2.4	2.5	2.7	2.8	3.0	3.1	3.3	3.4	3.5	3.7	3.8	4.0	4.1	4.2	4.4	4.5	17
18	2.6	2.7	2.8	3.0	3.2	3.3	3.4	3.6	3.8	3.9	4.0	4.2	4.4	4.5	4.6	4.8	18
19	2.7	2.8	3.0	3.2	3.3	3.5	3.6	3.8	4.0	4.1	4.3	4.4	4.6	4.8	4.9	5.1	19
20	2.8	3.0	3.2	3.3	3.5	3.7	3.8	4.0	4.2	4.3	4.5	4.7	4.8	5.0	5.2	5.3	20
21	3.0	3.2	3.3	3.5	3.7	3.8	4.0	4.2	4.4	4.6	4.7	4.9	5.1	5.2	5.4	5.6	21
22	3.1	3.3	3.5	3.7	3.8	4.0	4.2	4.4	4.6	4.8	5.0	5.1	5.3	5.5	5.7	5.9	22
23	3.3	3.4	3.6	3.8	4.0	4.2	4.4	4.6	4.8	5.0	5.2	5.4	5.6	5.8	5.9	6.1	23
24	3.4	3.6	3.8	4.0	4.2	4.4	4.6	4.8	5.0	5.2	5.4	5.6	5.8	6.0	6.2	6.4	24
25	3.5	3.8	4.0	4.2	4.4	4.6	4.8	5.0	5.2	5.4	5.6	5.8	6.0	6.2	6.5	6.7	25
26	3.7	3.9	4.1	4.3	4.6	4.8	5.0	5.2	5.4	5.6	5.8	6.1	6.3	6.5	6.7	6.9	26
27	3.8	4.0	4.3	4.5	4.7	5.0	5.2	5.4	5.6	5.8	6.1	6.3	6.5	6.8	7.0	7.2	27
28	4.0	4.2	4.4	4.7	4.9	5.1	5.4	5.6	5.8	6.1	6.3	6.5	6.8	7.0	7.2	7.5	28
29	4.1	4.4	4.6	4.8	5.1	5.3	5.6	5.8	6.0	6.3	6.5	6.8	7.0	7.2	7.5	7.7	29
30	4.2	4.5	4.8	5.0	5.2	5.5	5.8	6.0	6.2	6.5	6.8	7.0	7.2	7.5	7.8	8.0	30
31	4.4	4.6	4.9	5.2	5.4	5.7	5.9	6.2	6.5	6.7	7.0	7.2	7.5	7.8	8.0	8.3	31
32	4.5	4.8	5.1	5.3	5.6	5.9	6.1	6.4	6.7	6.9	7.2	7.5	7.7	8.0	8.3	8.5	32
33	4.7	5.0	5.2	5.5	5.8	6.0	6.3	6.6	6.9	7.2	7.4	7.7	8.0	8.2	8.5	8.8	33
34	4.8	5.1	5.4	5.7	6.0	6.2	6.5	6.8	7.1	7.4	7.6	7.9	8.2	8.5	8.8	9.1	34
35	5.0	5.2	5.5	5.8	6.1	6.4	6.7	7.0	7.3	7.6	7.9	8.2	8.5	8.8	9.0	9.3	35
36	5.1	5.4	5.7	6.0	6.3	6.6	6.9	7.2	7.5	7.8	8.1	8.4	8.7	9.0	9.3	9.6	36
37	5.2	5.6	5.9	6.2	6.5	6.8	7.1	7.4	7.7	8.0	8.3	8.6	8.9	9.2	9.6	9.9	37
38	5.4	5.7	6.0	6.3	6.8	7.0	7.3	7.6	7.9	8.2	8.6	8.9	9.2	9.5	9.8	10.1	38
39	5.5	5.8	6.2	6.5	6.8	7.2	7.5	7.8	8.1	8.4	8.8	9.1	9.4	9.8	10.1	10.4	39
40	5.7	6.0	6.3	6.7	7.0	7.3	7.7	8.0	8.3	8.7	9.0	9.3	9.7	10.0	10.3	10.7	40
41	5.8	6.2	6.5	6.8	7.2	7.5	7.9	8.2	8.5	8.9	9.2	9.6	9.9	10.2	10.6	10.9	41
42	6.0	6.3	6.6	7.0	7.4	7.7	8.0	8.4	8.8	9.1	9.4	9.8	10.2	10.5	10.9	11.2	42
43	6.1	6.4	6.8	7.2	7.5	7.9	8.2	8.6	9.0	9.3	9.7	10.0	10.4	10.8	11.1	11.5	43
44	6.2	6.6	7.0	7.3	7.7	8.1	8.4	8.8	9.2	9.5	9.9	10.3	10.6	11.0	11.4	11.7	44
45	6.4	6.8	7.1	7.5	7.9	8.2	8.6	9.0	9.4	9.8	10.1	10.5	10.9	11.2	11.6	12.0	45
46	6.5	6.9	7.3	7.7	8.0	8.4	8.8	9.2	9.6	10.0	10.4	10.7	11.1	11.5	11.9	12.3	46
47	6.7	7.0	7.4	7.8	8.2	8.6	9.0	9.4	9.8	10.2	10.6	11.0	11.4	11.8	12.1	12.5	47
48	6.8	7.2	7.6	8.0	8.4	8.8	9.2	9.6	10.0	10.4	10.8	11.2	11.6	12.0	12.4	12.8	48
49	6.9	7.3	7.8	8.2	8.6	9.0	9.4	9.8	10.2	10.6	11.0	11.4	11.8	12.2	12.7	13.1	49
50	7.1	7.5	7.9	8.3	8.8	9.2	9.6	10.0	10.4	10.8	11.2	11.7	12.1	12.5	12.9	13.3	50
51	7.2	7.6	8.1	8.5	8.9	9.4	9.8	10.2	10.6	11.1	11.5	11.9	12.3	12.8	13.2	13.6	51
52	7.4	7.8	8.2	8.7	9.1	9.5	10.0	10.4	10.8	11.3	11.7	12.1	12.6	13.0	13.4	13.9	52
53	7.5	8.0	8.4	8.8	9.3	9.7	10.2	10.6	11.0	11.5	11.9	12.4	12.8	13.2	13.7	14.1	53
54	7.6	8.1	8.6	9.0	9.4	9.9	10.4	10.8	11.2	11.7	12.1	12.6	13.0	13.5	14.0	14.4	54
55	7.8	8.2	8.7	9.2	9.6	10.1	10.5	11.0	11.5	11.9	12.4	12.8	13.3	13.8	14.2	14.7	55
56	7.9	8.4	8.9	9.3	9.8	10.3	10.7	11.2	11.7	12.1	12.6	13.1	13.5	14.0	14.5	14.9	56
57	8.1	8.6	9.0	9.5	10.0	10.4	10.9	11.4	11.9	12.4	12.8	13.3	13.8	14.2	14.7	15.2	57
58	8.2	8.7	9.2	9.7	10.2	10.6	11.1	11.6	12.1	12.6	13.0	13.5	14.0	14.5	15.0	15.5	58
59	8.4	8.9	9.3	9.8	10.3	10.8	11.3	11.8	12.3	12.8	13.3	13.8	14.3	14.8	15.2	15.7	59
60	8.5	9.0	9.5	10.0	10.5	11.0	11.5	12.0	12.5	13.0	13.5	14.0	14.5	15.0	15.5	16.0	60

TABLE 11
Speed, Time, and Distance

Min-utes	Speed in knots																Min-utes
	16.5	17.0	17.5	18.0	18.5	19.0	19.5	20.0	20.5	21.0	21.5	22.0	22.5	23.0	23.5	24.0	
	Miles	*Miles*	*Miles*	*Miles*	*Miles*	*Miles*	*Miles*	*Miles*	*Miles*	*Miles*	*Miles*	*Miles*	*Miles*	*Miles*	*Miles*	*Miles*	
1	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.4	0.4	0.4	0.4	0.4	0.4	0.4	1
2	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.7	0.7	0.7	0.7	0.7	0.8	0.8	0.8	0.8	2
3	0.8	0.8	0.9	0.9	0.9	1.0	1.0	1.0	1.0	1.0	1.1	1.1	1.1	1.1	1.2	1.2	3
4	1.1	1.1	1.2	1.2	1.2	1.3	1.3	1.3	1.4	1.4	1.4	1.5	1.5	1.5	1.6	1.6	4
5	1.4	1.4	1.5	1.5	1.5	1.6	1.6	1.7	1.7	1.8	1.8	1.8	1.9	1.9	2.0	2.0	5
6	1.6	1.7	1.8	1.8	1.8	1.9	2.0	2.0	2.0	2.1	2.2	2.2	2.2	2.3	2.4	2.4	6
7	1.9	2.0	2.0	2.1	2.2	2.2	2.3	2.3	2.4	2.4	2.5	2.6	2.6	2.7	2.7	2.8	7
8	2.2	2.3	2.3	2.4	2.5	2.5	2.6	2.7	2.7	2.8	2.9	2.9	3.0	3.1	3.1	3.2	8
9	2.5	2.6	2.6	2.7	2.8	2.8	2.9	3.0	3.1	3.2	3.2	3.3	3.4	3.4	3.5	3.6	9
10	2.8	2.8	2.9	3.0	3.1	3.2	3.2	3.3	3.4	3.5	3.6	3.7	3.8	3.8	3.9	4.0	10
11	3.0	3.1	3.2	3.3	3.4	3.5	3.6	3.7	3.8	3.8	3.9	4.0	4.1	4.2	4.3	4.4	11
12	3.3	3.4	3.5	3.6	3.7	3.8	3.9	4.0	4.1	4.2	4.3	4.4	4.5	4.6	4.7	4.8	12
13	3.6	3.7	3.8	3.9	4.0	4.1	4.2	4.3	4.4	4.6	4.7	4.8	4.9	5.0	5.1	5.2	13
14	3.8	4.0	4.1	4.2	4.3	4.4	4.6	4.7	4.8	4.9	5.0	5.1	5.2	5.4	5.5	5.6	14
15	4.1	4.2	4.4	4.5	4.6	4.8	4.9	5.0	5.1	5.2	5.4	5.5	5.6	5.8	5.9	6.0	15
16	4.4	4.5	4.7	4.8	4.9	5.1	5.2	5.3	5.5	5.6	5.7	5.9	6.0	6.1	6.3	6.4	16
17	4.7	4.8	5.0	5.1	5.2	5.4	5.5	5.7	5.8	6.0	6.1	6.2	6.4	6.5	6.7	6.8	17
18	5.0	5.1	5.2	5.4	5.6	5.7	5.8	6.0	6.2	6.3	6.4	6.6	6.8	6.9	7.0	7.2	18
19	5.2	5.4	5.5	5.7	5.9	6.0	6.2	6.3	6.5	6.6	6.8	7.0	7.1	7.3	7.4	7.6	19
20	5.5	5.7	5.8	6.0	6.2	6.3	6.5	6.7	6.8	7.0	7.2	7.3	7.5	7.7	7.8	8.0	20
21	5.8	6.0	6.1	6.3	6.5	6.6	6.8	7.0	7.2	7.4	7.5	7.7	7.9	8.0	8.2	8.4	21
22	6.0	6.2	6.4	6.6	6.8	7.0	7.2	7.3	7.5	7.7	7.9	8.1	8.2	8.4	8.6	8.8	22
23	6.3	6.5	6.7	6.9	7.1	7.3	7.5	7.7	7.9	8.0	8.2	8.4	8.6	8.8	9.0	9.2	23
24	6.6	6.8	7.0	7.2	7.4	7.6	7.8	8.0	8.2	8.4	8.6	8.8	9.0	9.2	9.4	9.6	24
25	6.9	7.1	7.3	7.5	7.7	7.9	8.1	8.3	8.5	8.8	9.0	9.2	9.4	9.6	9.8	10.0	25
26	7.2	7.4	7.6	7.8	8.0	8.2	8.4	8.7	8.9	9.1	9.3	9.5	9.8	10.0	10.2	10.4	26
27	7.4	7.6	7.9	8.1	8.3	8.6	8.8	9.0	9.2	9.4	9.7	9.9	10.1	10.4	10.6	10.8	27
28	7.7	7.9	8.2	8.4	8.6	8.9	9.1	9.3	9.6	9.8	10.0	10.3	10.5	10.7	11.0	11.2	28
29	8.0	8.2	8.5	8.7	8.9	9.2	9.4	9.7	9.9	10.2	10.4	10.6	10.9	11.1	11.4	11.6	29
30	8.2	8.5	8.8	9.0	9.2	9.5	9.8	10.0	10.2	10.5	10.8	11.0	11.2	11.5	11.8	12.0	30
31	8.5	8.8	9.0	9.3	9.6	9.8	10.1	10.3	10.6	10.8	11.1	11.4	11.6	11.9	12.1	12.4	31
32	8.8	9.1	9.3	9.6	9.9	10.1	10.4	10.7	10.9	11.2	11.5	11.7	12.0	12.3	12.5	12.8	32
33	9.1	9.4	9.6	9.9	10.2	10.4	10.7	11.0	11.3	11.6	11.8	12.1	12.4	12.6	12.9	13.2	33
34	9.4	9.6	9.9	10.2	10.5	10.8	11.0	11.3	11.6	11.9	12.2	12.5	12.8	13.0	13.3	13.6	34
35	9.6	9.9	10.2	10.5	10.8	11.1	11.4	11.7	12.0	12.2	12.5	12.8	13.1	13.4	13.7	14.0	35
36	9.9	10.2	10.5	10.8	11.1	11.4	11.7	12.0	12.3	12.6	12.9	13.2	13.5	13.8	14.1	14.4	36
37	10.2	10.5	10.8	11.1	11.4	11.7	12.0	12.3	12.6	13.0	13.3	13.6	13.9	14.2	14.5	14.8	37
38	10.4	10.8	11.1	11.4	11.7	12.0	12.4	12.7	13.0	13.3	13.6	13.9	14.2	14.6	14.9	15.2	38
39	10.7	11.0	11.4	11.7	12.0	12.4	12.7	13.0	13.3	13.6	14.0	14.3	14.6	15.0	15.3	15.6	39
40	11.0	11.3	11.7	12.0	12.3	12.7	13.0	13.3	13.7	14.0	14.3	14.7	15.0	15.3	15.7	16.0	40
41	11.3	11.6	12.0	12.3	12.6	13.0	13.3	13.7	14.0	14.4	14.7	15.0	15.4	15.7	16.1	16.4	41
42	11.6	11.9	12.2	12.6	13.0	13.3	13.6	14.0	14.4	14.7	15.0	15.4	15.8	16.1	16.4	16.8	42
43	11.8	12.2	12.5	12.9	13.3	13.6	14.0	14.3	14.7	15.0	15.4	15.8	16.1	16.5	16.8	17.2	43
44	12.1	12.5	12.8	13.2	13.6	13.9	14.3	14.7	15.0	15.4	15.8	16.1	16.5	16.9	17.2	17.6	44
45	12.4	12.8	13.1	13.5	13.9	14.2	14.6	15.0	15.4	15.8	16.1	16.5	16.9	17.2	17.6	18.0	45
46	12.6	13.0	13.4	13.8	14.2	14.6	15.0	15.3	15.7	16.1	16.5	16.9	17.2	17.6	18.0	18.4	46
47	12.9	13.3	13.7	14.1	14.5	14.9	15.3	15.7	16.1	16.4	16.8	17.2	17.6	18.0	18.4	18.8	47
48	13.2	13.6	14.0	14.4	14.8	15.2	15.6	16.0	16.4	16.8	17.2	17.6	18.0	18.4	18.8	19.2	48
49	13.5	13.9	14.3	14.7	15.1	15.5	15.9	16.3	16.7	17.2	17.6	18.0	18.4	18.8	19.2	19.6	49
50	13.8	14.2	14.6	15.0	15.4	15.8	16.2	16.7	17.1	17.5	17.9	18.3	18.8	19.2	19.6	20.0	50
51	14.0	14.4	14.9	15.3	15.7	16.2	16.6	17.0	17.4	17.8	18.3	18.7	19.1	19.6	20.0	20.4	51
52	14.3	14.7	15.2	15.6	16.0	16.5	16.9	17.3	17.8	18.2	18.6	19.1	19.5	19.9	20.4	20.8	52
53	14.6	15.0	15.5	15.9	16.3	16.8	17.2	17.7	18.1	18.6	19.0	19.4	19.9	20.3	20.8	21.2	53
54	14.8	15.3	15.8	16.2	16.6	17.1	17.6	18.0	18.4	18.9	19.4	19.8	20.2	20.7	21.2	21.6	54
55	15.1	15.6	16.0	16.5	17.0	17.4	17.9	18.3	18.8	19.2	19.7	20.2	20.6	21.1	21.5	22.0	55
56	15.4	15.9	16.3	16.8	17.3	17.7	18.2	18.7	19.1	19.6	20.1	20.5	21.0	21.5	21.9	22.4	56
57	15.7	16.2	16.6	17.1	17.6	18.0	18.5	19.0	19.5	20.0	20.4	20.9	21.4	21.8	22.3	22.8	57
58	16.0	16.4	16.9	17.4	17.9	18.4	18.8	19.3	19.8	20.3	20.8	21.3	21.8	22.2	22.7	23.2	58
59	16.2	16.7	17.2	17.7	18.2	18.7	19.2	19.7	20.2	20.6	21.1	21.6	22.1	22.6	23.1	23.6	59
60	16.5	17.0	17.5	18.0	18.5	19.0	19.5	20.0	20.5	21.0	21.5	22.0	22.5	23.0	23.5	24.0	60

TABLE 11
Speed, Time, and Distance

Min-utes	Speed in knots																Min-utes
	24.5	25.0	25.5	26.0	26.5	27.0	27.5	28.0	28.5	29.0	29.5	30.0	30.5	31.0	31.5	32.0	
	Miles	*Miles*	*Miles*	*Miles*	*Miles*	*Miles*	*Miles*	*Miles*	*Miles*	*Miles*	*Miles*	*Miles*	*Miles*	*Miles*	*Miles*	*Miles*	
1	0.4	0.4	0.4	0.4	0.4	0.4	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	1
2	0.8	0.8	0.8	0.9	0.9	0.9	0.9	0.9	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.1	2
3	1.2	1.2	1.3	1.3	1.3	1.4	1.4	1.4	1.4	1.4	1.5	1.5	1.5	1.6	1.6	1.6	3
4	1.6	1.7	1.7	1.7	1.8	1.8	1.8	1.9	1.9	1.9	2.0	2.0	2.0	2.1	2.1	2.1	4
5	2.0	2.1	2.1	2.2	2.2	2.2	2.3	2.3	2.4	2.4	2.5	2.5	2.5	2.6	2.6	2.7	5
6	2.4	2.5	2.6	2.6	2.6	2.7	2.8	2.8	2.8	2.9	3.0	3.0	3.0	3.1	3.2	3.2	6
7	2.9	2.9	3.0	3.0	3.1	3.2	3.2	3.3	3.3	3.4	3.4	3.5	3.6	3.6	3.7	3.7	7
8	3.3	3.3	3.4	3.5	3.5	3.6	3.7	3.7	3.8	3.9	3.9	4.0	4.1	4.1	4.2	4.3	8
9	3.7	3.8	3.8	3.9	4.0	4.0	4.1	4.2	4.3	4.4	4.4	4.5	4.6	4.6	4.7	4.8	9
10	4.1	4.2	4.2	4.3	4.4	4.5	4.6	4.7	4.8	4.8	4.9	5.0	5.1	5.2	5.2	5.3	10
11	4.5	4.6	4.7	4.8	4.9	5.0	5.0	5.1	5.2	5.3	5.4	5.5	5.6	5.7	5.8	5.9	11
12	4.9	5.0	5.1	5.2	5.3	5.4	5.5	5.6	5.7	5.8	5.9	6.0	6.1	6.2	6.3	6.4	12
13	5.3	5.4	5.5	5.6	5.7	5.8	6.0	6.1	6.2	6.3	6.4	6.5	6.6	6.7	6.8	6.9	13
14	5.7	5.8	6.0	6.1	6.2	6.3	6.4	6.5	6.6	6.8	6.9	7.0	7.1	7.2	7.4	7.5	14
15	6.1	6.2	6.4	6.5	6.6	6.8	6.9	7.0	7.1	7.2	7.4	7.5	7.6	7.8	7.9	8.0	15
16	6.5	6.7	6.8	6.9	7.1	7.2	7.3	7.5	7.6	7.7	7.9	8.0	8.1	8.3	8.4	8.5	16
17	6.9	7.1	7.2	7.4	7.5	7.6	7.8	7.9	8.1	8.2	8.4	8.5	8.6	8.8	8.9	9.1	17
18	7.4	7.5	7.6	7.8	8.0	8.1	8.2	8.4	8.6	8.7	8.8	9.0	9.2	9.3	9.4	9.6	18
19	7.8	7.9	8.1	8.2	8.4	8.6	8.7	8.9	9.0	9.2	9.3	9.5	9.7	9.8	10.0	10.1	19
20	8.2	8.3	8.5	8.7	8.8	9.0	9.2	9.3	9.5	9.7	9.8	10.0	10.2	10.3	10.5	10.7	20
21	8.6	8.8	8.9	9.1	9.3	9.4	9.6	9.8	10.0	10.2	10.3	10.5	10.7	10.8	11.0	11.2	21
22	9.0	9.2	9.4	9.5	9.7	9.9	10.1	10.3	10.4	10.6	10.8	11.0	11.2	11.4	11.6	11.7	22
23	9.4	9.6	9.8	10.0	10.2	10.4	10.5	10.7	10.9	11.1	11.3	11.5	11.7	11.9	12.1	12.3	23
24	9.8	10.0	10.2	10.4	10.6	10.8	11.0	11.2	11.4	11.6	11.8	12.0	12.2	12.4	12.6	12.8	24
25	10.2	10.4	10.6	10.8	11.0	11.2	11.5	11.7	11.9	12.1	12.3	12.5	12.7	12.9	13.1	13.3	25
26	10.6	10.8	11.0	11.3	11.5	11.7	11.9	12.1	12.4	12.6	12.8	13.0	13.2	13.4	13.6	13.9	26
27	11.0	11.2	11.5	11.7	11.9	12.2	12.4	12.6	12.8	13.0	13.3	13.5	13.7	14.0	14.2	14.4	27
28	11.4	11.7	11.9	12.1	12.4	12.6	12.8	13.1	13.3	13.5	13.8	14.0	14.2	14.5	14.7	14.9	28
29	11.8	12.1	12.3	12.6	12.8	13.0	13.3	13.5	13.8	14.0	14.3	14.5	14.7	15.0	15.2	15.5	29
30	12.2	12.5	12.8	13.0	13.2	13.5	13.8	14.0	14.2	14.5	14.8	15.0	15.2	15.5	15.8	16.0	30
31	12.7	12.9	13.2	13.4	13.7	14.0	14.2	14.5	14.7	15.0	15.2	15.5	15.8	16.0	16.3	16.5	31
32	13.1	13.3	13.6	13.9	14.1	14.4	14.7	14.9	15.2	15.5	15.7	16.0	16.3	16.5	16.8	17.1	32
33	13.5	13.8	14.0	14.3	14.6	14.8	15.1	15.4	15.7	16.0	16.2	16.5	16.8	17.0	17.3	17.6	33
34	13.9	14.2	14.4	14.7	15.0	15.3	15.6	15.9	16.2	16.4	16.7	17.0	17.3	17.6	17.8	18.1	34
35	14.3	14.6	14.9	15.2	15.5	15.8	16.0	16.3	16.6	16.9	17.2	17.5	17.8	18.1	18.4	18.7	35
36	14.7	15.0	15.3	15.6	15.9	16.2	16.5	16.8	17.1	17.4	17.7	18.0	18.3	18.6	18.9	19.2	36
37	15.1	15.4	15.7	16.0	16.3	16.6	17.0	17.3	17.6	17.9	18.2	18.5	18.8	19.1	19.4	19.7	37
38	15.5	15.8	16.2	16.5	16.8	17.1	17.4	17.7	18.0	18.4	18.7	19.0	19.3	19.6	20.0	20.3	38
39	15.9	16.2	16.6	16.9	17.2	17.6	17.9	18.2	18.5	18.8	19.2	19.5	19.8	20.2	20.5	20.8	39
40	16.3	16.7	17.0	17.3	17.7	18.0	18.3	18.7	19.0	19.3	19.7	20.0	20.3	20.7	21.0	21.3	40
41	16.7	17.1	17.4	17.8	18.1	18.4	18.8	19.1	19.5	19.8	20.2	20.5	20.8	21.2	21.5	21.9	41
42	17.2	17.5	17.8	18.2	18.6	18.9	19.2	19.6	20.0	20.3	20.6	21.0	21.4	21.7	22.0	22.4	42
43	17.6	17.9	18.3	18.6	19.0	19.4	19.7	20.1	20.4	20.8	21.1	21.5	21.9	22.2	22.6	22.9	43
44	18.0	18.3	18.7	19.1	19.4	19.8	20.2	20.5	20.9	21.3	21.6	22.0	22.4	22.7	23.1	23.5	44
45	18.4	18.8	19.1	19.5	19.9	20.2	20.6	21.0	21.4	21.8	22.1	22.5	22.9	23.2	23.6	24.0	45
46	18.8	19.2	19.6	19.9	20.3	20.7	21.1	21.5	21.8	22.2	22.6	23.0	23.4	23.8	24.2	24.5	46
47	19.2	19.6	20.0	20.4	20.8	21.2	21.5	21.9	22.3	22.7	23.1	23.5	23.9	24.3	24.7	25.1	47
48	19.6	20.0	20.4	20.8	21.2	21.6	22.0	22.4	22.8	23.2	23.6	24.0	24.4	24.8	25.2	25.6	48
49	20.0	20.4	20.8	21.2	21.6	22.0	22.5	22.9	23.3	23.7	24.1	24.5	24.9	25.3	25.7	26.1	49
50	20.4	20.8	21.2	21.7	22.1	22.5	22.9	23.3	23.8	24.2	24.6	25.0	25.4	25.8	26.2	26.7	50
51	20.8	21.2	21.7	22.1	22.5	23.0	23.4	23.8	24.2	24.6	25.1	25.5	25.9	26.4	26.8	27.2	51
52	21.2	21.7	22.1	22.5	23.0	23.4	23.8	24.3	24.7	25.1	25.6	26.0	26.4	26.9	27.3	27.7	52
53	21.6	22.1	22.5	23.0	23.4	23.8	24.3	24.7	25.2	25.6	26.1	26.5	26.9	27.4	27.8	28.3	53
54	22.0	22.5	23.0	23.4	23.8	24.3	24.8	25.2	25.6	26.1	26.6	27.0	27.4	27.9	28.4	28.8	54
55	22.5	22.9	23.4	23.8	24.3	24.8	25.2	25.7	26.1	26.6	27.0	27.5	28.0	28.4	28.9	29.3	55
56	22.9	23.3	23.8	24.3	24.7	25.2	25.7	26.1	26.6	27.1	27.5	28.0	28.5	28.9	29.4	29.9	56
57	23.3	23.8	24.2	24.7	25.2	25.6	26.1	26.6	27.1	27.6	28.0	28.5	29.0	29.4	29.9	30.4	57
58	23.7	24.2	24.6	25.1	25.6	26.1	26.6	27.1	27.6	28.0	28.5	29.0	29.5	30.0	30.4	30.9	58
59	24.1	24.6	25.1	25.6	26.1	26.6	27.0	27.5	28.0	28.5	29.0	29.5	30.0	30.5	31.0	31.5	59
60	24.5	25.0	25.5	26.0	26.5	27.0	27.5	28.0	28.5	29.0	29.5	30.0	30.5	31.0	31.5	32.0	60

TABLE 11

Speed, Time, and Distance

Minutes	Speed in knots																Minutes
	32.5	33.0	33.5	34.0	34.5	35.0	35.5	36.0	36.5	37.0	37.5	38.0	38.5	39.0	39.5	40.0	
	Miles	*Miles*	*Miles*	*Miles*	*Miles*	*Miles*	*Miles*	*Miles*	*Miles*	*Miles*	*Miles*	*Miles*	*Miles*	*Miles*	*Miles*	*Miles*	
1	0. 5	0. 6	0. 6	0. 6	0. 6	0. 6	0. 6	0. 6	0. 6	0. 6	0. 6	0. 6	0. 6	0. 6	0. 7	0. 7	1
2	1. 1	1. 1	1. 1	1. 1	1. 1	1. 2	1. 2	1. 2	1. 2	1. 2	1. 2	1. 3	1. 3	1. 3	1. 3	1. 3	2
3	1. 6	1. 6	1. 7	1. 7	1. 7	1. 8	1. 8	1. 8	1. 8	1. 8	1. 9	1. 9	1. 9	2. 0	2. 0	2. 0	3
4	2. 2	2. 2	2. 2	2. 3	2. 3	2. 3	2. 4	2. 4	2. 4	2. 5	2. 5	2. 5	2. 6	2. 6	2. 6	2. 7	4
5	2. 7	2. 8	2. 8	2. 8	2. 9	2. 9	3. 0	3. 0	3. 0	3. 1	3. 1	3. 2	3. 2	3. 2	3. 3	3. 3	5
6	3. 2	3. 3	3. 4	3. 4	3. 4	3. 5	3. 6	3. 6	3. 6	3. 7	3. 8	3. 8	3. 8	3. 9	4. 0	4. 0	6
7	3. 8	3. 8	3. 9	4. 0	4. 0	4. 1	4. 1	4. 2	4. 3	4. 3	4. 4	4. 4	4. 5	4. 6	4. 6	4. 7	7
8	4. 3	4. 4	4. 5	4. 5	4. 6	4. 7	4. 7	4. 8	4. 9	4. 9	5. 0	5. 1	5. 1	5. 2	5. 3	5. 3	8
9	4. 9	5. 0	5. 0	5. 1	5. 2	5. 2	5. 3	5. 4	5. 5	5. 6	5. 6	5. 7	5. 8	5. 8	5. 9	6. 0	9
10	5. 4	5. 5	5. 6	5. 7	5. 8	5. 8	5. 9	6. 0	6. 1	6. 2	6. 2	6. 3	6. 4	6. 5	6. 6	6. 7	10
11	6. 0	6. 0	6. 1	6. 2	6. 3	6. 4	6. 5	6. 6	6. 7	6. 8	6. 9	7. 0	7. 1	7. 2	7. 2	7. 3	11
12	6. 5	6. 6	6. 7	6. 8	6. 9	7. 0	7. 1	7. 2	7. 3	7. 4	7. 5	7. 6	7. 7	7. 8	7. 9	8. 0	12
13	7. 0	7. 2	7. 3	7. 4	7. 5	7. 6	7. 7	7. 8	7. 9	8. 0	8. 1	8. 2	8. 3	8. 4	8. 6	8. 7	13
14	7. 6	7. 7	7. 8	7. 9	8. 0	8. 2	8. 3	8. 4	8. 5	8. 6	8. 8	8. 9	9. 0	9. 1	9. 2	9. 3	14
15	8. 1	8. 2	8. 4	8. 5	8. 6	8. 8	8. 9	9. 0	9. 1	9. 2	9. 4	9. 5	9. 6	9. 8	9. 9	10. 0	15
16	8. 7	8. 8	8. 9	9. 1	9. 2	9. 3	9. 5	9. 6	9. 7	9. 9	10. 0	10. 1	10. 3	10. 4	10. 5	10. 7	16
17	9. 2	9. 4	9. 5	9. 6	9. 8	9. 9	10. 1	10. 2	10. 3	10. 5	10. 6	10. 8	10. 9	11. 0	11. 2	11. 3	17
18	9. 8	9. 9	10. 1	10. 2	10. 4	10. 5	10. 6	10. 8	11..0	11. 1	11. 2	11. 4	11. 6	11. 7	11. 8	12. 0	18
19	10. 3	10. 4	10. 6	10. 8	10. 9	11. 1	11. 2	11. 4	11. 6	11. 7	11. 9	12. 0	12. 2	12. 4	12. 5	12. 7	19
20	10. 8	11. 0	11. 2	11. 3	11. 5	11. 7	11. 8	12. 0	12. 2	12. 3	12. 5	12. 7	12. 8	13. 0	13. 2	13. 3	20
21	11. 4	11. 6	11. 7	11. 9	12. 1	12. 2	12. 4	12. 6	12. 8	13. 0	13. 1	13. 3	13. 5	13. 6	13. 8	14. 0	21
22	11. 9	12. 1	12. 3	12. 5	12. 6	12. 8	13. 0	13. 2	13. 4	13. 6	13. 8	13. 9	14. 1	14. 3	14. 5	14. 7	22
23	12. 5	12. 6	12. 8	13. 0	13. 2	13. 4	13. 6	13. 8	14. 0	14. 2	14. 4	14. 6	14. 8	15. 0	15. 1	15. 3	23
24	13. 0	13. 2	13. 4	13. 6	13. 8	14. 0	14. 2	14. 4	14. 6	14. 8	15. 0	15. 2	15. 4	15. 6	15. 8	16. 0	24
25	13. 5	13. 8	14. 0	14. 2	14. 4	14. 6	14. 8	15. 0	15. 2	15. 4	15. 6	15. 8	16. 0	16. 2	16. 5	16. 7	25
26	14. 1	14. 3	14. 5	14. 7	15. 0	15. 2	15. 4	15. 6	15. 8	16. 0	16. 2	16. 5	16. 7	16. 9	17. 1	17. 3	26
27	14. 6	14. 8	15. 1	15. 3	15. 5	15. 8	16. 0	16. 2	16. 4	16. 6	16. 9	17. 1	17. 3	17. 6	17. 8	18. 0	27
28	15. 2	15. 4	15. 6	15. 9	16. 1	16. 3	16. 6	16. 8	17. 0	17. 3	17. 5	17. 7	18. 0	18. 2	18. 4	18. 7	28
29	15. 7	16. 0	16. 2	16. 4	16. 7	16. 9	17. 2	17. 4	17. 6	17. 9	18. 1	18. 4	18. 6	18. 9	19. 1	19. 3	29
30	16. 2	16. 5	16. 8	17. 0	17. 2	17. 5	17. 8	18. 0	18. 2	18. 5	18. 8	19. 0	19. 2	19. 5	19. 8	20. 0	30
31	16. 8	17. 0	17. 3	17. 6	17. 8	18. 1	18. 3	18. 6	18. 9	19. 1	19. 4	19. 6	19. 9	20. 2	20. 4	20. 7	31
32	17. 3	17. 6	17. 9	18. 1	18. 4	18. 7	18. 9	19. 2	19. 5	19. 7	20. 0	20. 3	20. 5	20. 8	21. 1	21. 3	32
33	17. 9	18. 2	18. 4	18. 7	19. 0	19. 2	19. 5	19. 8	20. 1	20. 4	20. 6	20. 9	21. 2	21. 4	21. 7	22. 0	33
34	18. 4	18. 7	19. 0	19. 3	19. 6	19. 8	20. 1	20. 4	20. 7	21. 0	21. 2	21. 5	21. 8	22. 1	22. 4	22. 7	34
35	19. 0	19. 2	19. 5	19. 8	20. 1	20. 4	20. 7	21. 0	21. 3	21. 6	21. 9	22. 2	22. 5	22. 8	23. 0	23. 3	35
36	19. 5	19. 8	20. 1	20. 4	20. 7	21. 0	21. 3	21. 6	21. 9	22. 2	22. 5	22. 8	23. 1	23. 4	23. 7	24. 0	36
37	20. 0	20. 4	20. 7	21. 0	21. 3	21. 6	21. 9	22. 2	22. 5	22. 8	23. 1	23. 4	23. 7	24. 0	24. 4	24. 7	37
38	20. 6	20. 9	21. 2	21. 5	21. 8	22. 2	22. 5	22. 8	23. 1	23. 4	23. 8	24. 1	24. 4	24. 7	25. 0	25. 3	38
39	21. 1	21. 4	21. 8	22. 1	22. 4	22. 8	23. 1	23. 4	23. 7	24. 0	24. 4	24. 7	25. 0	25. 4	25. 7	26. 0	39
40	21. 7	22. 0	22. 3	22. 7	23. 0	23. 3	23. 7	24. 0	24. 3	24. 7	25. 0	25. 3	25. 7	26. 0	26. 3	26. 7	40
41	22. 2	22. 6	22. 9	23. 2	23. 6	23. 9	24. 3	24. 6	24. 9	25. 3	25. 6	26. 0	26. 3	26. 6	27. 0	27. 3	41
42	22. 8	23. 1	23. 4	23. 8	24. 2	24. 5	24. 8	25. 2	25. 6	25. 9	26. 2	26. 6	27. 0	27. 3	27. 6	28. 0	42
43	23. 3	23. 6	24. 0	24. 4	24. 7	25. 1	25. 4	25. 8	26. 2	26. 5	26. 9	27. 2	27. 6	28. 0	28. 3	28. 7	43
44	23. 8	24. 2	24. 6	24. 9	25. 3	25. 7	26. 0	26. 4	26. 8	27. 1	27. 5	27. 9	28. 2	28. 6	29. 0	29. 3	44
45	24. 4	24. 8	25. 1	25. 5	25. 9	26. 2	26. 6	27. 0	27. 4	27. 8	28. 1	28. 5	28. 9	29. 2	29. 6	30. 0	45
46	24. 9	25. 3	25. 7	26. 1	26. 4	26. 8	27. 2	27. 6	28. 0	28. 4	28. 8	29. 1	29. 5	29. 9	30. 3	30. 7	46
47	25. 5	25. 8	26. 2	26. 6	27. 0	27. 4	27. 8	28. 2	28. 6	29. 0	29. 4	29. 8	30. 2	30. 6	30. 9	31. 3	47
48	26. 0	26. 4	26. 8	27. 2	27. 6	28. 0	28. 4	28. 8	29. 2	29. 6	30. 0	30. 4	30. 8	31. 2	31. 6	32. 0	48
49	26. 5	27. 0	27. 4	27. 8	28. 2	28. 6	29. 0	29. 4	29. 8	30. 2	30. 6	31. 0	31. 4	31. 8	32. 3	32. 7	49
50	27. 1	27. 5	27. 9	28. 3	28. 8	29. 2	29. 6	30. 0	30. 4	30. 8	31. 2	31. 7	32. 1	32. 5	32. 9	33. 3	50
51	27. 6	28. 0	28. 5	28. 9	29. 3	29. 8	30. 2	30. 6	31. 0	31. 4	31. 9	32. 3	32. 7	33. 2	33. 6	34. 0	51
52	28. 2	28. 6	29. 0	29. 5	29. 9	30. 3	30. 8	31. 2	31. 6	32. 1	32. 5	32. 9	33. 4	33. 8	34. 2	34. 7	52
53	28. 7	29. 2	29. 6	30. 0	30. 5	30. 9	31. 4	31. 8	32. 2	32. 7	33. 1	33. 6	34. 0	34. 4	34. 9	35. 3	53
54	29. 2	29. 7	30. 2	30. 6	31. 0	31. 5	32. 0	32. 4	32. 8	33. 3	33. 8	34. 2	34. 6	35. 1	35. 6	36. 0	54
55	29. 8	30. 2	30. 7	31. 2	31. 6	32. 1	32. 5	33. 0	33. 5	33. 9	34. 4	34. 8	35. 3	35. 8	36. 2	36. 7	55
56	30. 3	30. 8	31. 3	31. 7	32. 2	32. 7	33. 1	33. 6	34. 1	34. 5	35. 0	35. 5	35. 9	36. 4	36. 9	37. 3	56
57	30. 9	31. 4	31. 8	32. 3	32. 8	33. 2	33. 7	34. 2	34. 7	35. 2	35. 6	36. 1	36. 6	37. 0	37. 5	38. 0	57
58	31. 4	31. 9	32. 4	32. 9	33. 4	33. 8	34. 3	34. 8	35. 3	35. 8	36. 2	36. 7	37. 2	37. 7	38. 2	38. 7	58
59	32. 0	32. 4	32. 9	33. 4	33. 9	34. 4	34. 9	35. 4	35. 9	36. 4	36. 9	37. 4	37. 9	38. 4	38. 8	39. 3	59
60	32. 5	33. 0	33. 5	34. 0	34. 5	35. 0	35. 5	36. 0	36. 5	37. 0	37. 5	38. 0	38. 5	39. 0	39. 5	40. 0	60

TABLE 12

Distance of the Horizon

Height **Feet**	Nautical Miles	Statute Miles	Height *meters*	Height **Feet**	Nautical Miles	Statute Miles	Height *meters*
1	1.2	1.3	.30	120	12.8	14.7	36.58
2	1.7	1.9	.61	125	13.1	15.1	38.10
3	2.0	2.3	.91	130	13.3	15.4	39.62
4	2.3	2.7	1.22	135	13.6	15.6	41.15
5	2.6	3.0	1.52	140	13.8	15.9	42.67
6	2.9	3.3	1.83	145	14.1	16.2	44.20
7	3.1	3.6	2.13	150	14.3	16.5	45.72
8	3.3	3.8	2.44	160	14.8	17.0	48.77
9	3.5	4.0	2.74	170	15.3	17.6	51.82
10	3.7	4.3	3.05	180	15.7	18.1	54.86
11	3.9	4.5	3.35	190	16.1	18.6	57.91
12	4.1	4.7	3.66	200	16.5	19.0	60.96
13	4.2	4.9	3.96	210	17.0	19.5	64.01
14	4.4	5.0	4.27	220	17.4	20.0	67.06
15	4.5	5.2	4.57	230	17.7	20.4	70.10
16	4.7	5.4	4.88	240	18.1	20.9	73.15
17	4.8	5.6	5.18	250	18.5	21.3	76.20
18	5.0	5.7	5.49	260	18.9	21.7	79.25
19	5.1	5.9	5.79	270	19.2	22.1	82.30
20	5.2	6.0	6.10	280	19.6	22.5	85.34
21	5.4	6.2	6.40	290	19.9	22.9	88.39
22	5.5	6.3	6.71	300	20.3	23.3	91.44
23	5.6	6.5	7.01	310	20.6	23.7	94.49
24	5.7	6.6	7.32	320	20.9	24.1	97.54
25	5.9	6.7	7.62	330	21.3	24.5	100.58
26	6.0	6.9	7.92	340	21.6	24.8	103.63
27	6.1	7.0	8.23	350	21.9	25.2	106.68
28	6.2	7.1	8.53	360	22.2	25.5	109.73
29	6.3	7.3	8.84	370	22.5	25.9	112.78
30	6.4	7.4	9.14	380	22.8	26.2	115.82
31	6.5	7.5	9.45	390	23.1	26.6	118.87
32	6.6	7.6	9.75	400	23.4	26.9	121.92
33	6.7	7.7	10.06	410	23.7	27.3	124.97
34	6.8	7.9	10.36	420	24.0	27.6	128.02
35	6.9	8.0	10.67	430	24.3	27.9	131.06
36	7.0	8.1	10.97	440	24.5	28.2	134.11
37	7.1	8.2	11.28	450	24.8	28.6	137.16
38	7.2	8.3	11.58	460	25.1	28.9	140.21
39	7.3	8.4	11.89	470	25.4	29.2	143.26
40	7.4	8.5	12.19	480	25.6	29.5	146.30
41	7.5	8.6	12.50	490	25.9	29.8	149.35
42	7.6	8.7	12.80	500	26.2	30.1	152.40
43	7.7	8.8	13.11	510	26.4	30.4	155.45
44	7.8	8.9	13.41	520	26.7	30.7	158.50
45	7.8	9.0	13.72	530	26.9	31.0	161.54
46	7.9	9.1	14.02	540	27.2	31.3	164.59
47	8.0	9.2	14.33	550	27.4	31.6	167.64
48	8.1	9.3	14.63	560	27.7	31.9	170.69
49	8.2	9.4	14.94	570	27.9	32.1	173.74
50	8.3	9.5	15.24	580	28.2	32.4	176.78
55	8.7	10.0	16.76	590	28.4	32.7	179.83
60	9.1	10.4	18.29	600	28.7	33.0	182.88
65	9.4	10.9	19.81	620	29.1	33.5	188.98
70	9.8	11.3	21.34	640	29.5	34.1	195.07
75	10.1	11.7	22.86	660	30.1	34.6	201.17
80	10.5	12.0	24.38	680	30.5	35.1	207.26
85	10.8	12.4	25.91	700	31.0	35.6	213.36
90	11.1	12.8	27.43	720	31.4	36.1	219.46
95	11.4	13.1	28.96	740	31.8	36.6	225.55
100	11.7	13.5	30.48	760	32.3	37.1	231.65
105	12.0	13.8	32.00	780	32.7	37.6	237.74
110	12.3	14.1	33.53	800	33.1	38.1	243.84
115	12.5	14.4	35.05	820	33.5	38.6	249.94

TABLE 13

Geographic Range

Object Height		Height of eye of observer in feet and meters										Object Height	
Feet		**7**	**10**	**13**	**16**	**20**	**23**	**26**	**30**	**33**	**36**		**Feet**
	Meters	2	3	4	5	6	7	8	9	10	11	Meters	
		Miles	Miles	Miles	Miles	Miles	Miles	Miles	Miles	Miles	Miles		
0	0	3.1	3.7	4.2	4.7	5.2	5.6	6.0	6.4	6.7	7.0	0	**0**
3	1	5.1	5.7	6.2	6.7	7.3	7.6	8.0	8.4	8.7	9.0	1	**3**
7	2	6.2	6.8	7.3	7.8	8.3	8.7	9.1	9.5	9.8	10.1	2	**7**
10	3	6.8	7.4	7.9	8.4	8.9	9.3	9.7	10.1	10.4	10.7	3	**10**
13	4	7.3	7.9	8.4	8.9	9.5	9.8	10.2	10.6	10.9	11.2	4	**13**
16	5	7.8	8.4	8.9	9.4	9.9	10.3	10.6	11.1	11.4	11.7	5	**16**
20	6	8.3	8.9	9.5	9.9	10.5	10.8	11.2	11.6	12.0	12.3	6	**20**
23	7	8.7	9.3	9.8	10.3	10.8	11.2	11.6	12.0	12.3	12.6	7	**23**
26	8	9.1	9.7	10.2	10.6	11.2	11.6	11.9	12.4	12.7	13.0	8	**26**
30	9	9.5	10.1	10.6	11.1	11.6	12.0	12.4	12.8	13.1	13.4	9	**30**
33	10	9.8	10.4	10.9	11.4	12.0	12.3	12.7	13.1	13.4	13.7	10	**33**
36	11	10.1	10.7	11.2	11.7	12.3	12.6	13.0	13.4	13.7	14.0	11	**36**
39	12	10.4	11.0	11.5	12.0	12.5	12.9	13.3	13.7	14.0	14.3	12	**39**
43	13	10.8	11.4	11.9	12.4	12.9	13.3	13.6	14.1	14.4	14.7	13	**43**
46	14	11.0	11.6	12.2	12.6	13.2	13.5	13.9	14.3	14.7	15.0	14	**46**
49	15	11.3	11.9	12.4	12.9	13.4	13.8	14.2	14.6	14.9	15.2	15	**49**
52	16	11.5	12.1	12.7	13.1	13.7	14.0	14.4	14.8	15.2	15.5	16	**52**
56	17	11.9	12.5	13.0	13.4	14.0	14.4	14.7	15.2	15.5	15.8	17	**56**
59	18	12.1	12.7	13.2	13.7	14.2	14.6	15.0	15.4	15.7	16.0	18	**59**
62	19	12.3	12.9	13.4	13.9	14.4	14.8	15.2	15.6	15.9	16.2	19	**62**
66	20	12.6	13.2	13.7	14.2	14.7	15.1	15.5	15.9	16.2	16.5	20	**66**
72	22	13.0	13.6	14.1	14.6	15.2	15.5	15.9	16.3	16.6	16.9	22	**72**
79	24	13.5	14.1	14.6	15.1	15.6	16.0	16.4	16.8	17.1	17.4	24	**79**
85	26	13.9	14.5	15.0	15.5	16.0	16.4	16.8	17.2	17.5	17.8	26	**85**
92	28	14.3	14.9	15.4	15.9	16.5	16.8	17.2	17.6	17.9	18.2	28	**92**
98	30	14.7	15.3	15.8	16.3	16.8	17.2	17.5	18.0	18.3	18.6	30	**98**
115	35	15.6	16.2	16.8	17.2	17.8	18.2	18.5	19.0	19.3	19.6	35	**115**
131	40	16.5	17.1	17.6	18.1	18.6	19.0	19.4	19.8	20.1	20.4	40	**131**
148	45	17.3	17.9	18.5	18.9	19.5	19.8	20.2	20.6	21.0	21.3	45	**148**
164	50	18.1	18.7	19.2	19.7	20.2	20.6	20.9	21.4	21.7	22.0	50	**164**
180	55	18.8	19.4	19.9	20.4	20.9	21.3	21.7	22.1	22.4	22.7	55	**180**
197	60	19.5	20.1	20.6	21.1	21.7	22.0	22.4	22.8	23.1	23.4	60	**197**
213	65	20.2	20.8	21.3	21.8	22.3	22.7	23.0	23.5	23.8	24.1	65	**213**
230	70	20.8	21.4	22.0	22.4	23.0	23.4	23.7	24.2	24.5	24.8	70	**230**
246	75	21.4	22.1	22.6	23.0	23.6	24.0	24.3	24.8	25.1	25.4	75	**246**
262	80	22.0	22.6	23.2	23.6	24.2	24.5	24.9	25.3	25.7	26.0	80	**262**
279	85	22.6	23.2	23.8	24.2	24.8	25.2	25.5	26.0	26.3	26.6	85	**279**
295	90	23.2	23.8	24.3	24.8	25.3	25.7	26.1	26.5	26.8	27.1	90	**295**
312	95	23.8	24.4	24.9	25.3	25.9	26.3	26.6	27.1	27.4	27.7	95	**312**
328	100	24.3	24.9	25.4	25.9	26.4	26.8	27.2	27.6	27.9	28.2	100	**328**
361	110	25.3	25.9	26.4	26.9	27.5	27.8	28.2	28.6	29.0	29.3	110	**361**
394	120	26.3	26.9	27.4	27.9	28.5	28.8	29.2	29.6	29.9	30.2	120	**394**
427	130	27.3	27.9	28.4	28.9	29.4	29.8	30.1	30.6	30.9	31.2	130	**427**
459	140	28.2	28.8	29.3	29.7	30.3	30.7	31.0	31.5	31.8	32.1	140	**459**
492	150	29.0	29.7	30.2	30.6	31.2	31.6	31.9	32.4	32.7	33.0	150	**492**
525	160	29.9	30.5	31.0	31.5	32.0	32.4	32.8	33.2	33.5	33.8	160	**525**
558	170	30.7	31.3	31.9	32.3	32.9	33.2	33.6	34.0	34.4	34.7	170	**558**
591	180	31.5	32.1	32.7	33.1	33.7	34.1	34.4	34.9	35.2	35.5	180	**591**
623	190	32.3	32.9	33.4	33.9	34.4	34.8	35.2	35.6	35.9	36.2	190	**623**
656	200	33.1	33.7	34.2	34.6	35.2	35.6	35.9	36.4	36.7	37.0	200	**656**
722	220	34.5	35.1	35.7	36.1	36.7	37.0	37.4	37.8	38.2	38.5	220	**722**
787	240	35.9	36.5	37.0	37.5	38.1	38.4	38.8	39.2	39.5	39.8	240	**787**
853	260	37.3	37.9	38.4	38.9	39.4	39.8	40.1	40.6	40.9	41.2	260	**853**
919	280	38.6	39.2	39.7	40.1	40.7	41.1	41.4	41.9	42.2	42.5	280	**919**
984	300	39.8	40.4	40.9	41.4	41.9	42.3	42.7	43.1	43.4	43.7	300	**984**

TABLE 13

Geographic Range

Object Height		Height of eye of observer in feet and meters										Object Height	
Feet		**39**	**43**	**46**	**49**	**52**	**56**	**59**	**62**	**66**	**69**		**Feet**
	Meters	12	13	14	15	16	17	18	19	20	21	Meters	
		Miles	Miles	Miles	Miles	Miles	Miles	Miles	Miles	Miles	Miles		
0	0	7.3	7.7	7.9	8.2	8.4	8.8	9.0	9.2	9.5	9.7	0	**0**
3	1	9.3	9.7	10.0	10.2	10.5	10.8	11.0	11.2	11.5	11.7	1	**3**
7	2	10.4	10.8	11.0	11.3	11.5	11.9	12.1	12.3	12.6	12.8	2	**7**
10	3	11.0	11.4	11.6	11.9	12.1	12.5	12.7	12.9	13.2	13.4	3	**10**
13	4	11.5	11.9	12.2	12.4	12.7	13.0	13.2	13.4	13.7	13.9	4	**13**
16	5	12.0	12.4	12.6	12.9	13.1	13.4	13.7	13.9	14.2	14.4	5	**16**
20	6	12.5	12.9	13.2	13.4	13.7	14.0	14.2	14.4	14.7	15.0	6	**20**
23	7	12.9	13.3	13.5	13.8	14.0	14.4	14.6	14.8	15.1	15.3	7	**23**
26	8	13.3	13.6	13.9	14.2	14.4	14.7	15.0	15.2	15.5	15.7	8	**26**
30	9	13.7	14.1	14.3	14.6	14.8	15.2	15.4	15.6	15.9	16.1	9	**30**
33	10	14.0	14.4	14.7	14.9	15.2	15.5	15.7	15.9	16.2	16.4	10	**33**
36	11	14.3	14.7	15.0	15.2	15.5	15.8	16.0	16.2	16.5	16.7	11	**36**
39	12	14.6	15.0	15.2	15.5	15.7	16.1	16.3	16.5	16.8	17.0	12	**39**
43	13	15.0	15.3	15.6	15.9	16.1	16.4	16.7	16.9	17.2	17.4	13	**43**
46	14	15.2	15.6	15.9	16.1	16.4	16.7	16.9	17.1	17.4	17.7	14	**46**
49	15	15.5	15.9	16.1	16.4	16.6	16.9	17.2	17.4	17.7	17.9	15	**49**
52	16	15.7	16.1	16.4	16.6	16.9	17.2	17.4	17.6	17.9	18.2	16	**52**
56	17	16.1	16.4	16.7	16.9	17.2	17.5	17.7	18.0	18.3	18.5	17	**56**
59	18	16.3	16.7	16.9	17.2	17.4	17.7	18.0	18.2	18.5	18.7	18	**59**
62	19	16.5	16.9	17.1	17.4	17.6	18.0	18.2	18.4	18.7	18.9	19	**62**
66	20	16.8	17.2	17.4	17.7	17.9	18.3	18.5	18.7	19.0	19.2	20	**66**
72	22	17.2	17.6	17.9	18.1	18.4	18.7	18.9	19.1	19.4	19.6	22	**72**
79	24	17.7	18.1	18.3	18.6	18.8	19.2	19.4	19.6	19.9	20.1	24	**79**
85	26	18.1	18.5	18.7	19.0	19.2	19.5	19.8	20.0	20.3	20.5	26	**85**
92	28	18.5	18.9	19.2	19.4	19.7	20.0	20.2	20.4	20.7	20.9	28	**92**
98	30	18.9	19.3	19.5	19.8	20.0	20.3	20.6	20.8	21.1	21.3	30	**98**
115	35	19.9	20.2	20.5	20.7	21.0	21.3	21.5	21.8	22.1	22.3	35	**115**
131	40	20.7	21.1	21.3	21.6	21.8	22.1	22.4	22.6	22.9	23.1	40	**131**
148	45	21.5	21.9	22.2	22.4	22.7	23.0	23.2	23.4	23.7	24.0	45	**148**
164	50	22.3	22.7	22.9	23.2	23.4	23.7	24.0	24.2	24.5	24.7	50	**164**
180	55	23.0	23.4	23.6	23.9	24.1	24.5	24.7	24.9	25.2	25.4	55	**180**
197	60	23.7	24.1	24.4	24.6	24.9	25.2	25.4	25.6	25.9	26.1	60	**197**
213	65	24.4	24.7	25.0	25.3	25.5	25.8	26.1	26.3	26.6	26.8	65	**213**
230	70	25.1	25.4	25.7	25.9	26.2	26.5	26.7	27.0	27.2	27.5	70	**230**
246	75	25.7	26.0	26.3	26.5	26.8	27.1	27.3	27.6	27.9	28.1	75	**246**
262	80	26.2	26.6	26.9	27.1	27.4	27.7	27.9	28.2	28.4	28.7	80	**262**
279	85	26.8	27.2	27.5	27.7	28.0	28.3	28.5	28.8	29.0	29.3	85	**279**
295	90	27.4	27.8	28.0	28.3	28.5	28.9	29.1	29.3	29.6	29.8	90	**295**
312	95	28.0	28.3	28.6	28.9	29.1	29.4	29.7	29.9	30.2	30.4	95	**312**
328	100	28.5	28.9	29.1	29.4	29.6	29.9	30.2	30.4	30.7	30.9	100	**328**
361	110	29.5	29.9	30.2	30.4	30.7	31.0	31.2	31.4	31.7	31.9	110	**361**
394	120	30.5	30.9	31.2	31.4	31.7	32.0	32.2	32.4	32.7	32.9	120	**394**
427	130	31.5	31.8	32.1	32.4	32.6	32.9	33.2	33.4	33.7	33.9	130	**427**
459	140	32.4	32.7	33.0	33.3	33.5	33.8	34.1	34.3	34.6	34.8	140	**459**
492	150	33.3	33.6	33.9	34.1	34.4	34.7	34.9	35.2	35.5	35.7	150	**492**
525	160	34.1	34.5	34.7	35.0	35.2	35.6	35.8	36.0	36.3	36.5	160	**525**
558	170	34.9	35.3	35.6	35.8	36.1	36.4	36.6	36.9	37.1	37.4	170	**558**
591	180	35.7	36.1	36.4	36.6	36.9	37.2	37.4	37.7	37.9	38.2	180	**591**
623	190	36.5	36.9	37.1	37.4	37.6	38.0	38.2	38.4	38.7	38.9	190	**623**
656	200	37.3	37.6	37.9	38.2	38.4	38.7	39.0	39.2	39.5	39.7	200	**656**
722	220	38.7	39.1	39.4	39.6	39.9	40.2	40.4	40.7	40.9	41.2	220	**722**
787	240	40.1	40.5	40.8	41.0	41.3	41.6	41.8	42.0	42.3	42.5	240	**787**
853	260	41.5	41.8	42.1	42.4	42.6	42.9	43.2	43.4	43.7	43.9	260	**853**
919	280	42.8	43.1	43.4	43.7	43.9	44.2	44.5	44.7	45.0	45.2	280	**919**
984	300	44.0	44.4	44.6	44.9	45.1	45.5	45.7	45.9	46.2	46.4	300	**984**

TABLE 13

Geographic Range

Object Height		Height of eye of observer in feet and meters										Object Height	
Feet		**72**	**75**	**79**	**82**	**85**	**89**	**92**	**95**	**98**	**115**		**Feet**
	Meters	22	23	24	25	26	27	28	29	30	35	Meters	
		Miles	Miles	Miles	Miles	Miles	Miles	Miles	Miles	Miles	Miles		
0	0	9.9	10.2	10.4	10.6	10.8	11.0	11.2	11.4	11.6	12.5	0	**0**
3	1	12.0	12.2	12.4	12.6	12.8	13.1	13.2	13.4	13.6	14.6	1	**3**
7	2	13.0	13.3	13.5	13.7	13.9	14.1	14.3	14.5	14.7	15.6	2	**7**
10	3	13.6	13.9	14.1	14.3	14.5	14.7	14.9	15.1	15.3	16.2	3	**10**
13	4	14.1	14.4	14.6	14.8	15.0	15.3	15.4	15.6	15.8	16.8	4	**13**
16	5	14.6	14.9	15.1	15.3	15.5	15.7	15.9	16.1	16.3	17.2	5	**16**
20	6	15.2	15.4	15.6	15.8	16.0	16.3	16.5	16.6	16.8	17.8	6	**20**
23	7	15.5	15.8	16.0	16.2	16.4	16.6	16.8	17.0	17.2	18.2	7	**23**
26	8	15.9	16.2	16.4	16.6	16.8	17.0	17.2	17.4	17.5	18.5	8	**26**
30	9	16.3	16.6	16.8	17.0	17.2	17.4	17.6	17.8	18.0	19.0	9	**30**
33	10	16.6	16.9	17.1	17.3	17.5	17.8	17.9	18.1	18.3	19.3	10	**33**
36	11	16.9	17.2	17.4	17.6	17.8	18.1	18.2	18.4	18.6	19.6	11	**36**
39	12	17.2	17.5	17.7	17.9	18.1	18.3	18.5	18.7	18.9	19.8	12	**39**
43	13	17.6	17.9	18.1	18.3	18.5	18.7	18.9	19.1	19.3	20.2	13	**43**
46	14	17.9	18.1	18.3	18.5	18.7	19.0	19.2	19.3	19.5	20.5	14	**46**
49	15	18.1	18.4	18.6	18.8	19.0	19.2	19.4	19.6	19.8	20.7	15	**49**
52	16	18.4	18.6	18.8	19.0	19.2	19.5	19.7	19.8	20.0	21.0	16	**52**
56	17	18.7	19.0	19.2	19.4	19.5	19.8	20.0	20.2	20.3	21.3	17	**56**
59	18	18.9	19.2	19.4	19.6	19.8	20.0	20.2	20.4	20.6	21.5	18	**59**
62	19	19.1	19.4	19.6	19.8	20.0	20.3	20.4	20.6	20.8	21.8	19	**62**
66	20	19.4	19.7	19.9	20.1	20.3	20.5	20.7	20.9	21.1	22.0	20	**66**
72	22	19.9	20.1	20.3	20.5	20.7	21.0	21.2	21.3	21.5	22.5	22	**72**
79	24	20.3	20.6	20.8	21.0	21.2	21.4	21.6	21.8	22.0	22.9	24	**79**
85	26	20.7	21.0	21.2	21.4	21.6	21.8	22.0	22.2	22.4	23.3	26	**85**
92	28	21.2	21.4	21.6	21.8	22.0	22.3	22.4	22.6	22.8	23.8	28	**92**
98	30	21.5	21.8	22.0	22.2	22.4	22.6	22.8	23.0	23.2	24.1	30	**98**
115	35	22.5	22.7	22.9	23.1	23.3	23.6	23.8	24.0	24.1	25.1	35	**115**
131	40	23.3	23.6	23.8	24.0	24.2	24.4	24.6	24.8	25.0	25.9	40	**131**
148	45	24.2	24.4	24.6	24.8	25.0	25.3	25.5	25.6	25.8	26.8	45	**148**
164	50	24.9	25.2	25.4	25.6	25.8	26.0	26.2	26.4	26.6	27.5	50	**164**
180	55	25.6	25.9	26.1	26.3	26.5	26.7	26.9	27.1	27.3	28.2	55	**180**
197	60	26.3	26.6	26.8	27.0	27.2	27.5	27.6	27.8	28.0	29.0	60	**197**
213	65	27.0	27.3	27.5	27.7	27.9	28.1	28.3	28.5	28.7	29.6	65	**213**
230	70	27.7	27.9	28.1	28.3	28.5	28.8	29.0	29.1	29.3	30.3	70	**230**
246	75	28.3	28.6	28.7	28.9	29.1	29.4	29.6	29.7	29.9	30.9	75	**246**
262	80	28.9	29.1	29.3	29.5	29.7	30.0	30.1	30.3	30.5	31.5	80	**262**
279	85	29.5	29.7	29.9	30.1	30.3	30.6	30.8	30.9	31.1	32.1	85	**279**
295	90	30.0	30.3	30.5	30.7	30.9	31.1	31.3	31.5	31.7	32.6	90	**295**
312	95	30.6	30.9	31.1	31.3	31.4	31.7	31.9	32.1	32.2	33.2	95	**312**
328	100	31.1	31.4	31.6	31.8	32.0	32.2	32.4	32.6	32.8	33.7	100	**328**
361	110	32.2	32.4	32.6	32.8	33.0	33.3	33.5	33.6	33.8	34.8	110	**361**
394	120	33.2	33.4	33.6	33.8	34.0	34.3	34.4	34.6	34.8	35.8	120	**394**
427	130	34.1	34.4	34.6	34.8	35.0	35.2	35.4	35.6	35.8	36.7	130	**427**
459	140	35.0	35.3	35.5	35.7	35.9	36.1	36.3	36.5	36.6	37.6	140	**459**
492	150	35.9	36.2	36.4	36.5	36.7	37.0	37.2	37.3	37.5	38.5	150	**492**
525	160	36.7	37.0	37.2	37.4	37.6	37.8	38.0	38.2	38.4	39.4	160	**525**
558	170	37.6	37.8	38.0	38.2	38.4	38.7	38.9	39.0	39.2	40.2	170	**558**
591	180	38.4	38.6	38.8	39.0	39.2	39.5	39.7	39.8	40.0	41.0	180	**591**
623	190	39.1	39.4	39.6	39.8	40.0	40.2	40.4	40.6	40.8	41.8	190	**623**
656	200	39.9	40.2	40.4	40.6	40.8	41.0	41.2	41.4	41.5	42.5	200	**656**
722	220	41.4	41.6	41.8	42.0	42.2	42.5	42.7	42.8	43.0	44.0	220	**722**
787	240	42.8	43.0	43.2	43.4	43.6	43.9	44.0	44.2	44.4	45.4	240	**787**
853	260	44.1	44.4	44.6	44.8	45.0	45.2	45.4	45.6	45.8	46.7	260	**853**
919	280	45.4	45.7	45.9	46.1	46.3	46.5	46.7	46.9	47.1	48.0	280	**919**
984	300	46.6	46.9	47.1	47.3	47.5	47.7	47.9	48.1	48.3	49.2	300	**984**

TABLE 14

Dip of the Sea Short of the Horizon

Distance	Height of eye above the sea, in feet and (meters)										Distance
	5 (1.5)	**10** (3.0)	**15** (4.6)	**20** (6.1)	**25** (7.6)	**30** (9.1)	**35** (10.7)	**40** (12.2)	**45** (13.7)	**50** (15.2)	
Miles	′	′	′	′	′	′	′	′	′	′	*Miles*
0.2	14.2	28.4	42.5	56.7	70.8	84.9	99.1	113.2	127.3	141.5	0.2
0.3	9.6	19.0	28.4	37.8	47.3	56.7	66.1	75.6	85.0	94.4	0.3
0.4	7.2	14.3	21.4	28.5	35.5	42.6	49.7	56.7	63.8	70.9	0.4
0.5	5.9	11.5	17.2	22.8	28.5	34.2	39.8	45.5	51.1	56.8	0.5
0.6	5.0	9.7	14.4	19.1	23.8	28.5	33.3	38.0	42.7	47.4	0.6
0.7	4.3	8.4	12.4	16.5	20.5	24.5	28.6	32.6	36.7	40.7	0.7
0.8	3.9	7.4	10.9	14.5	18.0	21.5	25.1	28.6	32.2	35.7	0.8
0.9	3.5	6.7	9.8	12.9	16.1	19.2	22.4	25.5	28.7	31.8	0.9
1.0	3.2	6.1	8.9	11.7	14.6	17.4	20.2	23.0	25.9	28.7	1.0
1.1	3.0	5.6	8.2	10.7	13.3	15.9	18.5	21.0	23.6	26.2	1.1
1.2	2.9	5.2	7.6	9.9	12.3	14.6	17.0	19.4	21.7	24.1	1.2
1.3	2.7	4.9	7.1	9.2	11.4	13.6	15.8	17.9	20.1	22.3	1.3
1.4	2.6	4.6	6.6	8.7	10.7	12.7	14.7	16.7	18.8	20.8	1.4
1.5	2.5	4.4	6.3	8.2	10.1	11.9	13.8	15.7	17.6	19.5	1.5
1.6	2.4	4.2	6.0	7.7	9.5	11.3	13.0	14.8	16.6	18.3	1.6
1.7	2.4	4.0	5.7	7.4	9.0	10.7	12.4	14.0	15.7	17.3	1.7
1.8	2.3	3.9	5.5	7.0	8.6	10.2	11.7	13.3	14.9	16.5	1.8
1.9	2.3	3.8	5.3	6.7	8.2	9.7	11.2	12.7	14.2	15.7	1.9
2.0	2.2	3.7	5.1	6.5	7.9	9.3	10.7	12.1	13.6	15.0	2.0
2.1	2.2	3.6	4.9	6.3	7.6	9.0	10.3	11.7	13.0	14.3	2.1
2.2	2.2	3.5	4.8	6.1	7.3	8.6	9.9	11.2	12.5	13.8	2.2
2.3	2.2	3.4	4.6	5.9	7.1	8.3	9.6	10.8	12.0	13.3	2.3
2.4	2.2	3.4	4.5	5.7	6.9	8.1	9.2	10.4	11.6	12.8	2.4
2.5	2.2	3.3	4.4	5.6	6.7	7.8	9.0	10.1	11.2	12.4	2.5
2.6	2.2	3.3	4.3	5.4	6.5	7.6	8.7	9.8	10.9	12.0	2.6
2.7	2.2	3.2	4.3	5.3	6.4	7.4	8.5	9.5	10.6	11.6	2.7
2.8	2.2	3.2	4.2	5.2	6.2	7.2	8.2	9.2	10.3	11.3	2.8
2.9	2.2	3.2	4.1	5.1	6.1	7.1	8.0	9.0	10.0	11.0	2.9
3.0	2.2	3.1	4.1	5.0	6.0	6.9	7.8	8.8	9.7	10.7	3.0
3.1	2.2	3.1	4.0	4.9	5.9	6.8	7.7	8.6	9.5	10.4	3.1
3.2	2.2	3.1	4.0	4.9	5.8	6.6	7.5	8.4	9.3	10.2	3.2
3.3	2.2	3.1	3.9	4.8	5.7	6.5	7.4	8.2	9.1	9.9	3.3
3.4	2.2	3.1	3.9	4.7	5.6	6.4	7.2	8.1	8.9	9.7	3.4
3.5	2.2	3.1	3.9	4.7	5.5	6.3	7.1	7.9	8.7	9.5	3.5
3.6	2.2	3.1	3.9	4.6	5.4	6.2	7.0	7.8	8.6	9.4	3.6
3.7	2.2	3.1	3.8	4.6	5.4	6.1	6.9	7.7	8.4	9.2	3.7
3.8	2.2	3.1	3.8	4.6	5.3	6.0	6.8	7.5	8.3	9.0	3.8
3.9	2.2	3.1	3.8	4.5	5.2	6.0	6.7	7.4	8.2	8.9	3.9
4.0	2.2	3.1	3.8	4.5	5.2	5.9	6.6	7.3	8.0	8.7	4.0
4.1	2.2	3.1	3.8	4.5	5.2	5.8	6.5	7.2	7.9	8.6	4.1
4.2	2.2	3.1	3.8	4.4	5.1	5.8	6.5	7.1	7.8	8.5	4.2
4.3	2.2	3.1	3.8	4.4	5.1	5.7	6.4	7.1	7.7	8.4	4.3
4.4	2.2	3.1	3.8	4.4	5.0	5.7	6.3	7.0	7.6	8.3	4.4
4.5	2.2	3.1	3.8	4.4	5.0	5.6	6.3	6.9	7.5	8.2	4.5
4.6	2.2	3.1	3.8	4.4	5.0	5.6	6.2	6.8	7.4	8.1	4.6
4.7	2.2	3.1	3.8	4.4	5.0	5.6	6.2	6.8	7.4	8.0	4.7
4.8	2.2	3.1	3.8	4.4	4.9	5.5	6.1	6.7	7.3	7.9	4.8
4.9	2.2	3.1	3.8	4.3	4.9	5.5	6.1	6.7	7.2	7.8	4.9
5.0	2.2	3.1	3.8	4.3	4.9	5.5	6.0	6.6	7.2	7.7	5.0
5.5	2.2	3.1	3.8	4.3	4.9	5.4	5.9	6.4	6.9	7.4	5.5
6.0	2.2	3.1	3.8	4.3	4.9	5.3	5.8	6.3	6.7	7.2	6.0
6.5	2.2	3.1	3.8	4.3	4.9	5.3	5.7	6.2	6.6	7.1	6.5
7.0	2.2	3.1	3.8	4.3	4.9	5.3	5.7	6.1	6.5	7.0	7.0
7.5	2.2	3.1	3.8	4.3	4.9	5.3	5.7	6.1	6.5	6.9	7.5
8.0	2.2	3.1	3.8	4.3	4.9	5.3	5.7	6.1	6.5	6.9	8.0
8.5	2.2	3.1	3.8	4.3	4.9	5.3	5.7	6.1	6.5	6.9	8.5
9.0	2.2	3.1	3.8	4.3	4.9	5.3	5.7	6.1	6.5	6.9	9.0
9.5	2.2	3.1	3.8	4.3	4.9	5.3	5.7	6.1	6.5	6.9	9.5
10.0	2.2	3.1	3.8	4.3	4.9	5.3	5.7	6.1	6.5	6.9	10.0

TABLE 14

Dip of the Sea Short of the Horizon

Distance	Height of eye above the sea, in feet and (meters)										Distance
	55 (16.8)	**60** (18.3)	**65** (19.8)	**70** (21.3)	**75** (22.9)	**80** (24.4)	**85** (25.9)	**90** (27.4)	**95** (29.0)	**100** (30.5)	
Miles	′	′	′	′	′	′	′	′	′	′	*Miles*
0.2	155.6	169.7	183.3	197.9	212.0	226.1	240.2	254.2	268.3	282.3	0.2
0.3	103.8	113.3	122.7	132.1	141.6	151.0	160.4	169.9	179.3	188.7	0.3
0.4	77.9	85.0	92.1	99.2	106.2	113.3	120.3	127.4	134.5	141.5	0.4
0.5	62.4	68.1	73.8	79.4	85.1	90.7	96.4	102.0	107.7	113.3	0.5
0.6	52.1	56.8	61.5	66.3	71.0	75.7	80.4	85.1	89.8	94.5	0.6
0.7	44.7	48.8	52.8	56.9	60.9	64.9	69.0	73.0	77.1	81.1	0.7
0.8	39.2	42.8	46.3	49.8	53.4	56.9	60.4	64.0	67.5	71.1	0.8
0.9	34.9	38.1	41.2	44.4	47.5	50.7	53.8	56.9	60.1	63.2	0.9
1.0	31.5	34.4	37.2	40.0	42.8	45.7	48.5	51.3	54.2	57.0	1.0
1.1	28.7	31.3	33.9	36.5	39.0	41.6	44.2	46.7	49.3	51.9	1.1
1.2	26.4	28.8	31.1	33.5	35.9	38.2	40.6	42.9	45.3	47.6	1.2
1.3	24.5	26.7	28.8	31.0	33.2	35.4	37.5	39.7	41.9	44.1	1.3
1.4	22.8	24.8	26.8	28.9	30.9	32.9	34.9	37.0	39.0	41.0	1.4
1.5	21.4	23.3	25.1	27.0	28.9	30.8	32.7	34.6	36.5	38.3	1.5
1.6	20.1	21.9	23.6	25.4	27.2	29.0	30.7	32.5	34.3	36.0	1.6
1.7	19.0	20.7	22.3	24.0	25.7	27.3	29.0	30.7	32.3	34.0	1.7
1.8	18.0	19.6	21.2	22.8	24.3	25.9	27.5	29.0	30.6	32.2	1.8
1.9	17.2	18.7	20.1	21.6	23.1	24.6	26.1	27.6	29.1	30.6	1.9
2.0	16.4	17.8	19.2	20.6	22.0	23.5	24.9	26.3	27.7	29.1	2.0
2.1	15.7	17.0	18.4	19.7	21.1	22.4	23.8	25.1	26.5	27.8	2.1
2.2	15.1	16.3	17.6	18.9	20.2	21.5	22.8	24.1	25.3	26.6	2.2
2.3	14.5	15.7	16.9	18.2	19.4	20.6	21.9	23.1	24.3	25.6	2.3
2.4	14.0	15.1	16.3	17.5	18.7	19.9	21.0	22.2	23.4	24.6	2.4
2.5	13.5	14.6	15.8	16.9	18.0	19.1	20.3	21.4	22.5	23.7	2.5
2.6	13.0	14.1	15.2	16.3	17.4	18.5	19.6	20.7	21.8	22.8	2.6
2.7	12.6	13.7	14.7	15.8	16.8	17.9	18.9	20.0	21.0	22.1	2.7
2.8	12.3	13.3	14.3	15.3	16.3	17.3	18.3	19.3	20.4	21.4	2.8
2.9	11.9	12.9	13.9	14.9	15.8	16.8	17.8	18.8	19.7	20.7	2.9
3.0	11.6	12.6	13.5	14.4	15.4	16.3	17.3	18.2	19.2	20.1	3.0
3.1	11.3	12.2	13.2	14.1	15.0	15.9	16.8	17.7	18.6	19.5	3.1
3.2	11.1	11.9	12.8	13.7	14.6	15.5	16.4	17.2	18.1	19.0	3.2
3.3	10.8	11.7	12.5	13.4	14.2	15.1	15.9	16.8	17.7	18.5	3.3
3.4	10.6	11.4	12.2	13.1	13.9	14.7	15.6	16.4	17.2	18.1	3.4
3.5	10.3	11.2	12.0	12.8	13.6	14.4	15.2	16.0	16.8	17.6	3.5
3.6	10.1	10.9	11.7	12.5	13.3	14.1	14.9	15.6	16.4	17.2	3.6
3.7	9.9	10.7	11.5	12.2	13.0	13.8	14.5	15.3	16.1	16.8	3.7
3.8	9.8	10.5	11.3	12.0	12.7	13.5	14.2	15.0	15.7	16.5	3.8
3.9	9.6	10.3	11.1	11.8	12.5	13.2	14.0	14.7	15.4	16.1	3.9
4.0	9.4	10.1	10.9	11.6	12.3	13.0	13.7	14.4	15.1	15.8	4.0
4.1	9.3	10.0	10.7	11.4	12.1	12.7	13.4	14.1	14.8	15.5	4.1
4.2	9.2	9.8	10.5	11.2	11.8	12.5	13.2	13.9	14.5	15.2	4.2
4.3	9.0	9.7	10.3	11.0	11.7	12.3	13.0	13.6	14.3	14.9	4.3
4.4	8.9	9.5	10.2	10.8	11.5	12.1	12.8	13.4	14.0	14.7	4.4
4.5	8.8	9.4	10.0	10.7	11.3	11.9	12.6	13.2	13.8	14.4	4.5
4.6	8.7	9.3	9.9	10.5	11.1	11.8	12.4	13.0	13.6	14.2	4.6
4.7	8.6	9.2	9.8	10.4	11.0	11.6	12.2	12.8	13.4	14.0	4.7
4.8	8.5	9.1	9.7	10.2	10.8	11.4	12.0	12.6	13.2	13.8	4.8
4.9	8.4	9.0	9.5	10.1	10.7	11.3	11.9	12.4	13.0	13.6	4.9
5.0	8.3	8.9	9.4	10.0	10.6	11.1	11.7	12.3	12.8	13.4	5.0
5.5	7.9	8.5	9.0	9.5	10.0	10.5	11.0	11.5	12.1	12.6	5.5
6.0	7.7	8.2	8.6	9.1	9.6	10.0	10.5	11.0	11.5	11.9	6.0
6.5	7.5	7.9	8.4	8.8	9.2	9.7	10.1	10.5	11.0	11.4	6.5
7.0	7.4	7.8	8.2	8.6	9.0	9.4	9.8	10.2	10.6	11.0	7.0
7.5	7.3	7.6	8.0	8.4	8.8	9.2	9.5	9.9	10.3	10.7	7.5
8.0	7.2	7.6	7.9	8.3	8.6	9.0	9.3	9.7	10.0	10.4	8.0
8.5	7.2	7.5	7.9	8.2	8.5	8.9	9.2	9.5	9.9	10.2	8.5
9.0	7.2	7.5	7.8	8.1	8.5	8.8	9.1	9.4	9.7	10.0	9.0
9.5	7.2	7.5	7.8	8.1	8.4	8.7	9.0	9.3	9.6	9.9	9.5
10.0	7.2	7.5	7.8	8.1	8.4	8.7	9.0	9.3	9.5	9.8	10.0

TABLE 15

Distance by Vertical Angle
Measured Between Sea Horizon and Top of Object Beyond Sea Horizon

Angle	Difference in feet between height of object and height of eye of observer										Angle
	25	30	35	40	45	50	60	70	80	90	
° ′	*Miles*	*Miles*	*Miles*	*Miles*	*Miles*	*Miles*	*Miles*	*Miles*	*Miles*	*Miles*	° ′
–0 04	12. 4	12. 8	13. 2	13. 6	14. 0	14. 4	15. 0	15. 7	16. 3	16. 9	–0 04
–0 03	10. 5	10. 9	11. 4	11. 8	12. 2	12. 6	13. 3	14. 0	14. 6	15. 2	–0 03
–0 02	8. 7	9. 2	9. 7	10. 2	10. 6	11. 0	11. 8	12. 5	13. 1	13. 7	–0 02
–0 01	7. 2	7. 7	8. 2	8. 7	9. 1	9. 5	10. 3	11. 0	11. 7	12. 3	–0 01
0 00	5. 8	6. 4	6. 9	7. 4	7. 8	8. 2	9. 0	9. 7	10. 4	11. 1	0 00
0 01	4. 8	5. 3	5. 8	6. 3	6. 7	7. 1	7. 9	8. 6	9. 3	9. 9	0 01
0 02	3. 9	4. 4	4. 9	5. 4	5. 8	6. 2	6. 9	7. 6	8. 3	8. 9	0 02
0 03	3. 3	3. 7	4. 2	4. 6	5. 0	5. 4	6. 1	6. 8	7. 4	8. 0	0 03
0 04	2. 8	3. 2	3. 6	4. 0	4. 4	4. 7	5. 4	6. 1	6. 7	7. 3	0 04
0 05	2. 4	2. 8	3. 1	3. 5	3. 9	4. 2	4. 8	5. 5	6. 0	6. 6	0 05
0 06	2. 1	2. 4	2. 8	3. 1	3. 4	3. 7	4. 3	4. 9	5. 5	6. 0	0 06
0 07	1. 8	2. 2	2. 5	2. 8	3. 1	3. 4	3. 9	4. 5	5. 0	5. 5	0 07
0 08	1. 6	1. 9	2. 2	2. 5	2. 8	3. 1	3. 6	4. 1	4. 6	5. 0	0 08
0 09	1. 5	1. 7	2. 0	2. 3	2. 5	2. 8	3. 3	3. 8	4. 2	4. 7	0 09
0 10	1. 3	1. 6	1. 8	2. 1	2. 3	2. 6	3. 0	3. 5	3. 9	4. 3	0 10
0 15	0. 9	1. 1	1. 3	1. 5	1. 6	1. 8	2. 1	2. 5	2. 8	3. 1	0 15
0 20	0. 7	0. 8	1. 0	1. 1	1. 2	1. 4	1. 6	1. 9	2. 2	2. 4	0 20
0 25	0. 6	0. 7	0. 8	0. 9	1. 0	1. 1	1. 3	1. 5	1. 8	2. 0	0 25
0 30	0. 5	0. 6	0. 7	0. 7	0. 8	0. 9	1. 1	1. 3	1. 5	1. 7	0 30
0 35		0. 5	0. 6	0. 6	0. 7	0. 8	1. 0	1. 1	1. 3	1. 4	0 35
0 40			0. 5	0. 6	0. 6	0. 7	0. 8	1. 0	1. 1	1. 3	0 40
0 45				0. 5	0. 6	0. 6	0. 7	0. 9	1. 0	1. 1	0 45
0 50				0. 5	0. 5	0. 6	0. 7	0. 8	0. 9	1. 0	0 50
0 55					0. 5	0. 5	0. 6	0. 7	0. 8	0. 9	0 55
1 00						0. 5	0. 6	0. 7	0. 8	0. 8	1 00
1 10							0. 5	0. 6	0. 6	0. 7	1 10
1 20								0. 5	0. 6	0. 6	1 20
1 30									0. 5	0. 6	1 30
1 40									0. 5	0. 5	1 40
1 50										0. 5	1 50

TABLE 15

Distance by Vertical Angle
Measured Between Sea Horizon and Top of Object Beyond Sea Horizon

Angle	Difference in feet between height of object and height of eye of observer											Angle
	100	120	140	160	180	200	250	300	350	400	450	
° ′	*Miles*	*Miles*	*Miles*	*Miles*	*Miles*	*Miles*	*Miles*	*Miles*	*Miles*	*Miles*	*Miles*	° ′
0 00	11. 7	12. 8	13. 8	14. 8	15. 7	16. 5	18. 4	20. 2	21. 8	23. 3	24. 7	0 00
0 01	10. 5	11. 6	12. 7	13. 6	14. 5	15. 3	17. 3	19. 0	20. 7	22. 2	23. 6	0 01
0 02	9. 5	10. 6	11. 6	12. 5	13. 4	14. 3	16. 2	17. 9	19. 6	21. 0	22. 5	0 02
0 03	8. 6	9. 7	10. 7	11. 6	12. 5	13. 3	15. 2	16. 9	18. 5	20. 0	21. 4	0 03
0 04	7. 8	8. 8	9. 8	10. 7	11. 6	12. 4	14. 3	16. 0	17. 5	19. 0	20. 4	0 04
0 05	7. 1	8. 1	9. 0	9. 9	10. 8	11. 5	13. 4	15. 1	16. 6	18. 1	19. 5	0 05
0 06	6. 5	7. 5	8. 4	9. 2	10. 0	10. 8	12. 6	14. 2	15. 8	17. 2	18. 6	0 06
0 07	6. 0	6. 9	7. 7	8. 6	9. 4	10. 1	11. 9	13. 5	15. 0	16. 4	17. 7	0 07
0 08	5. 5	6. 4	7. 2	8. 0	8. 8	9. 5	11. 2	12. 8	14. 2	15. 6	16. 9	0 08
0 09	5. 1	5. 9	6. 7	7. 5	8. 2	8. 9	10. 6	12. 1	13. 5	14. 9	16. 2	0 09
0 10	4. 7	5. 5	6. 3	7. 0	7. 7	8. 4	10. 0	11. 5	12. 9	14. 2	15. 5	0 10
0 11	4. 4	5. 2	5. 9	6. 6	7. 3	7. 9	9. 5	10. 9	12. 3	13. 6	14. 8	0 11
0 12	4. 1	4. 8	5. 5	6. 2	6. 9	7. 5	9. 0	10. 4	11. 7	13. 0	14. 2	0 12
0 13	3. 9	4. 6	5. 2	5. 9	6. 5	7. 1	8. 5	9. 9	11. 2	12. 5	13. 6	0 13
0 14	3. 6	4. 3	4. 9	5. 6	6. 2	6. 7	8. 1	9. 5	10. 7	11. 9	13. 1	0 14
0 15	3. 4	4. 1	4. 7	5. 3	5. 8	6. 4	7. 8	9. 0	10. 3	11. 5	12. 6	0 15
0 20	2. 7	3. 2	3. 7	4. 2	4. 6	5. 1	6. 3	7. 4	8. 4	9. 5	10. 5	0 20
0 25	2. 2	2. 6	3. 0	3. 4	3. 8	4. 2	5. 2	6. 2	7. 1	8. 0	8. 9	0 25
0 30	1. 8	2. 2	2. 6	2. 9	3. 2	3. 6	4. 4	5. 3	6. 1	6. 9	7. 7	0 30
0 35	1. 6	1. 9	2. 2	2. 5	2. 8	3. 1	3. 9	4. 6	5. 3	6. 0	6. 7	0 35
0 40	1. 4	1. 7	1. 9	2. 2	2. 5	2. 8	3. 4	4. 1	4. 7	5. 4	6. 0	0 40
0 45	1. 2	1. 5	1. 7	2. 0	2. 2	2. 5	3. 1	3. 6	4. 2	4. 8	5. 4	0 45
0 50	1. 1	1. 3	1. 6	1. 8	2. 0	2. 2	2. 8	3. 3	3. 8	4. 4	4. 9	0 50
0 55	1. 0	1. 2	1. 4	1. 6	1. 8	2. 0	2. 5	3. 0	3. 5	4. 0	4. 5	0 55
1 00	0. 9	1. 1	1. 3	1. 5	1. 7	1. 9	2. 3	2. 8	3. 2	3. 7	4. 1	1 00
1 10	0. 8	1. 0	1. 1	1. 3	1. 4	1. 6	2. 0	2. 4	2. 8	3. 2	3. 6	1 10
1 20	0. 7	0. 8	1. 0	1. 1	1. 3	1. 4	1. 8	2. 1	2. 4	2. 8	3. 1	1 20
1 30	0. 6	0. 8	0. 9	1. 0	1. 1	1. 2	1. 6	1. 9	2. 2	2. 5	2. 8	1 30
1 40	0. 6	0. 7	0. 8	0. 9	1. 0	1. 1	1. 4	1. 7	2. 0	2. 2	2. 5	1 40
1 50	0. 5	0. 6	0. 7	0. 8	0. 9	1. 0	1. 3	1. 5	1. 8	2. 0	2. 3	1 50
2 00	0. 5	0. 6	0. 7	0. 8	0. 8	0. 9	1. 2	1. 4	1. 6	1. 9	2. 1	2 00
2 30		0. 5	0. 5	0. 6	0. 7	0. 8	0. 9	1. 1	1. 3	1. 5	1. 7	2 30
3 00				0. 5	0. 6	0. 6	0. 8	0. 9	1. 1	1. 3	1. 4	3 00
3 30					0. 5	0. 5	0. 7	0. 8	0. 9	1. 1	1. 2	3 30
4 00						0. 5	0. 6	0. 7	0. 8	0. 9	1. 1	4 00
4 30							0. 5	0. 6	0. 7	0. 8	0. 9	4 30
5 00							0. 5	0. 6	0. 7	0. 8	0. 8	5 00
6 00								0. 5	0. 5	0. 6	0. 7	6 00
7 00									0. 5	0. 5	0. 6	7 00
8 00										0. 5	0. 5	8 00
10 00												10 00

TABLE 15

Distance by Vertical Angle

Measured Between Sea Horizon and Top of Object Beyond Sea Horizon

Angle	Difference in feet between height of object and height of eye of observer											Angle
	500	600	700	800	900	1000	1200	1400	1600	1800	2000	
° ′	*Miles*	*Miles*	*Miles*	*Miles*	*Miles*	*Miles*	*Miles*	*Miles*	*Miles*	*Miles*	*Miles*	° ′
0 05	20. 8	23. 2	25. 4	27. 5	29. 5	31. 4	34. 8	38. 0	41. 0	43. 8	46. 5	0 05
0 06	19. 8	22. 3	24. 5	26. 6	28. 5	30. 4	33. 8	37. 0	40. 0	42. 8	45. 4	0 06
0 07	19. 0	21. 4	23. 6	25. 6	27. 6	29. 4	32. 9	36. 0	39. 0	41. 8	44. 4	0 07
0 08	18. 2	20. 5	22. 7	24. 7	26. 7	28. 5	31. 9	35. 1	38. 0	40. 8	43. 4	0 08
0 09	17. 4	19. 7	21. 9	23. 9	25. 8	27. 6	31. 0	34. 1	37. 0	39. 8	42. 5	0 09
0 10	16. 7	19. 0	21. 1	23. 1	25. 0	26. 8	30. 1	33. 2	36. 2	38. 9	41. 5	0 10
0 11	16. 0	18. 3	20. 4	22. 3	24. 2	26. 0	29. 3	32. 4	35. 3	38. 0	40. 6	0 11
0 12	15. 4	17. 6	19. 6	21. 6	23. 4	25. 2	28. 5	31. 5	34. 4	37. 1	39. 7	0 12
0 13	14. 8	16. 9	19. 0	20. 9	22. 7	24. 4	27. 7	30. 7	33. 6	36. 3	38. 8	0 13
0 14	14. 2	16. 3	18. 3	20. 2	22. 0	23. 7	26. 9	30. 0	32. 8	35. 4	38. 0	0 14
0 15	13. 7	15. 8	17. 7	19. 6	21. 3	23. 0	26. 2	29. 2	32. 0	34. 6	37. 2	0 15
0 17	12. 7	14. 7	16. 6	18. 4	20. 1	21. 7	24. 8	27. 8	30. 5	33. 1	35. 6	0 17
0 20	11. 4	13. 3	15. 1	16. 8	18. 4	20. 0	23. 0	25. 8	28. 4	31. 0	33. 4	0 20
0 25	9. 7	11. 4	13. 0	14. 6	16. 1	17. 5	20. 3	22. 9	25. 4	27. 8	30. 1	0 25
0 30	8. 4	9. 9	11. 4	12. 8	14. 2	15. 5	18. 1	20. 5	22. 9	25. 2	27. 4	0 30
0 35	7. 4	8. 8	10. 1	11. 4	12. 6	13. 9	16. 3	18. 5	20. 7	22. 9	24. 9	0 35
0 40	6. 6	7. 8	9. 0	10. 2	11. 4	12. 5	14. 7	16. 9	18. 9	20. 9	22. 9	0 40
0 45	6. 0	7. 1	8. 2	9. 3	10. 3	11. 4	13. 4	15. 4	17. 3	19. 2	21. 1	0 45
0 50	5. 4	6. 4	7. 5	8. 5	9. 4	10. 4	12. 3	14. 2	16. 0	17. 7	19. 5	0 50
0 55	5. 0	5. 9	6. 8	7. 8	8. 7	9. 6	11. 4	13. 1	14. 8	16. 5	18. 1	0 55
1 00	4. 6	5. 5	6. 3	7. 2	8. 0	8. 9	10. 5	12. 2	13. 8	15. 3	16. 9	1 00
1 10	3. 9	4. 7	5. 5	6. 2	7. 0	7. 7	9. 2	10. 6	12. 1	13. 5	14. 9	1 10
1 20	3. 5	4. 2	4. 8	5. 5	6. 2	6. 8	8. 1	9. 4	10. 7	12. 0	13. 2	1 20
1 30	3. 1	3. 7	4. 3	4. 9	5. 5	6. 1	7. 3	8. 5	9. 6	10. 8	11. 9	1 30
1 40	2. 8	3. 3	3. 9	4. 4	5. 0	5. 5	6. 6	7. 7	8. 7	9. 8	10. 8	1 40
1 50	2. 5	3. 0	3. 6	4. 1	4. 5	5. 0	6. 0	7. 0	8. 0	9. 0	9. 9	1 50
2 00	2. 3	2. 8	3. 3	3. 7	4. 2	4. 6	5. 5	6. 5	7. 4	8. 2	9. 1	2 00
2 30	1. 9	2. 2	2. 6	3. 0	3. 4	3. 7	4. 5	5. 2	5. 9	6. 7	7. 4	2 30
3 00	1. 6	1. 9	2. 2	2. 5	2. 8	3. 1	3. 7	4. 4	5. 0	5. 6	6. 2	3 00
3 30	1. 3	1. 6	1. 9	2. 1	2. 4	2. 7	3. 2	3. 7	4. 3	4. 8	5. 3	3 30
4 00	1. 2	1. 4	1. 6	1. 9	2. 1	2. 3	2. 8	3. 3	3. 7	4. 2	4. 7	4 00
5 00	0. 9	1. 1	1. 3	1. 5	1. 7	1. 9	2. 3	2. 6	3. 0	3. 4	3. 7	5 00
6 00	0. 8	0. 9	1. 1	1. 3	1. 4	1. 6	1. 9	2. 2	2. 5	2. 8	3. 1	6 00
7 00	0. 7	0. 8	0. 9	1. 1	1. 2	1. 3	1. 6	1. 9	2. 1	2. 4	2. 7	7 00
8 00	0. 6	0. 7	0. 8	0. 9	1. 1	1. 2	1. 4	1. 6	1. 9	2. 1	2. 3	8 00
10 00	0. 5	0. 6	0. 7	0. 7	0. 8	0. 9	1. 1	1. 3	1. 5	1. 7	1. 9	10 00
12 00		0. 5	0. 5	0. 6	0. 7	0. 8	0. 9	1. 1	1. 2	1. 4	1. 5	12 00
15 00				0. 5	0. 6	0. 6	0. 7	0. 9	1. 0	1. 1	1. 2	15 00
20 00						0. 5	0. 5	0. 6	0. 7	0. 8	0. 9	20 00
25 00								0. 5	0. 6	0. 6	0. 7	25 00
30 00									0. 5	0. 5	0. 6	30 00

TABLE 16

Distance by Vertical Angle
Measured Between Waterline at Object and Top of Object

Angle	Height of object above the sea, in **feet** and (meters)										Angle
	10 (3.0)	**15** (4.6)	**20** (6.1)	**25** (7.6)	**30** (9.1)	**35** (10.7)	**40** (12.2)	**45** (13.7)	**50** (15.2)	**55** (16.8)	
° ′	*Miles*	*Miles*	*Miles*	*Miles*	*Miles*	*Miles*	*Miles*	*Miles*	*Miles*	*Miles*	° ′
0 10	0. 57	0. 85	1. 13	1. 41	1. 70	1. 98	2. 26	2. 55	2. 83	3. 11	0 10
0 11	0. 51	0. 77	1. 03	1. 29	1. 54	1. 80	2. 06	2. 31	2. 57	2. 83	0 11
0 12	0. 47	0. 71	0. 94	1. 18	1. 41	1. 65	1. 89	2. 12	2. 36	2. 59	0 12
0 13	0. 44	0. 65	0. 87	1. 09	1. 31	1. 52	1. 74	1. 96	2. 18	2. 39	0 13
0 14	0. 40	0. 61	0. 81	1. 01	1. 21	1. 41	1. 62	1. 82	2. 02	2. 22	0 14
0 15	0. 38	0. 57	0. 75	0. 94	1. 18	1. 32	1. 51	1. 70	1. 89	2. 07	0 15
0 20	0. 28	0. 42	0. 57	0. 71	0. 85	0. 99	1. 13	1. 27	1. 41	1. 56	0 20
0 25	0. 23	0. 34	0. 45	0. 57	0. 68	0. 79	0. 91	1. 02	1. 13	1. 24	0 25
0 30	0. 19	0. 28	0. 38	0. 47	0. 57	0. 66	0. 75	0. 85	0. 94	1. 04	0 30
0 35	0. 16	0. 24	0. 32	0. 40	0. 46	0. 57	0. 65	0. 73	0. 81	0. 89	0 35
0 40	0. 14	0. 21	0. 28	0. 35	0. 42	0. 50	0. 57	0. 64	0. 71	0. 78	0 40
0 45	0. 13	0. 19	0. 25	0. 31	0. 38	0. 44	0. 50	0. 57	0. 63	0. 69	0 45
0 50	0. 11	0. 17	0. 23	0. 28	0. 34	0. 40	0. 45	0. 51	0. 57	0. 62	0 50
0 55	0. 10	0. 15	0. 21	0. 26	0. 31	0. 36	0. 41	0. 46	0. 51	0. 57	0 55
1 00		0. 14	0. 19	0. 24	0. 28	0. 33	0. 38	0. 42	0. 47	0. 52	1 00
1 10		0. 12	0. 16	0. 20	0. 24	0. 28	0. 32	0. 36	0. 40	0. 44	1 10
1 20		0. 11	0. 14	0. 18	0. 21	0. 25	0. 28	0. 32	0. 35	0. 39	1 20
1 30		0. 09	0. 13	0. 16	0. 19	0. 22	0. 25	0. 28	0. 31	0. 35	1 30
1 40			0. 11	0. 14	0. 17	0. 20	0. 23	0. 25	0. 28	0. 31	1 40
1 50			0. 10	0. 13	0. 15	0. 18	0. 21	0. 23	0. 26	0. 28	1 50
2 00				0. 12	0. 14	0. 16	0. 19	0. 21	0. 24	0. 26	2 00
2 15				0. 10	0. 13	0. 15	0. 17	0. 19	0. 21	0. 23	2 15
2 30					0. 11	0. 13	0. 15	0. 17	0. 19	0. 21	2 30
2 45					0. 10	0. 12	0. 14	0. 15	0. 17	0. 19	2 45
3 00						0. 11	0. 13	0. 14	0. 16	0. 17	3 00
3 20						0. 10	0. 11	0. 13	0. 14	0. 16	3 20
3 40							0. 10	0. 12	0. 13	0. 14	3 40
4 00								0. 11	0. 12	0. 13	4 00
4 20								0. 10	0. 11	0. 12	4 20
4 40									0. 10	0. 11	4 40
5 00										0. 10	5 00

TABLE 16

Distance by Vertical Angle
Measured Between Waterline at Object and Top of Object

Angle	Height of object above the sea, in **feet** and (meters)										Angle
	60 (18.3)	**65** (19.8)	**70** (21.3)	**75** (22. 9)	**80** (24.4)	**85** (25.9)	**90** (27.4)	**95** (29.0)	**100** (30.5)	**105** (32.0)	
° ′	*Miles*	*Miles*	*Miles*	*Miles*	*Miles*	*Miles*	*Miles*	*Miles*	*Miles*	*Miles*	° ′
0 10	3 .39	3 .68	3 .96	4 .24	4 .53	4 .81					0 10
0 11	3 .09	3 .34	3 .60	3 .86	4 .11	4 .37	4 .63	4 .89			0 11
0 12	2 .83	3 .06	3 .30	3 .54	3 .77	4 .01	4 .24	4 .48	4 .71	4 .95	0 12
0 13	2 .61	2 .83	3 .05	3 .26	3 .48	3 .70	3 .92	4 .13	4 .35	4 .57	0 13
0 14	2 .42	2 .63	2 .83	3 .03	3 .23	3 .44	3 .64	3 .84	4 .04	4 .24	0 14
0 15	2 .26	2 .45	2 .64	2 .83	3 .02	3 .21	3 .39	3 .58	3 .77	3 .96	0 15
0 20	1 .70	1 .84	1 .98	2 .12	2 .26	2 .40	2 .55	2 .69	2 .83	2 .97	0 20
0 25	1 .36	1 .47	1 .58	1 .70	1 .81	1 .92	2 .04	2 .15	2 .26	2 .38	0 25
0 30	1 .13	1 .23	1 .32	1 .41	1 .51	1 .60	1 .70	1 .79	1 .89	1 .98	0 30
0 35	0 .97	1 .05	1 .13	1 .21	1 .29	1 .37	1 .45	1 .54	1 .62	1 .70	0 35
0 40	0 .85	0 .92	0 .99	1 .06	1 .13	1 .20	1 .27	1 .34	1 .41	1 .49	0 40
0 45	0 .75	0 .82	0 .88	0 .94	1 .01	1 .07	1 .13	1 .19	1 .26	1 .32	0 45
0 50	0 .68	0 .74	0 .79	0 .85	0 .91	0 .96	1 .02	1 .07	1 .13	1 .19	0 50
0 55	0 .62	0 .67	0 .72	0 .77	0 .82	0 .87	0 .93	0 .98	1 .03	1 .08	0 55
1 00	0 .57	0 .61	0 .66	0 .71	0 .75	0 .80	0 .85	0 .90	0 .94	0 .99	1 00
1 10	0 .48	0 .53	0 .57	0 .61	0 .65	0 .69	0 .73	0 .77	0 .81	0 .85	1 10
1 20	0 .42	0 .46	0 .49	0 .53	0 .57	0 .60	0 .64	0 .67	0 .71	0 .74	1 20
1 30	0 .38	0 .41	0 .44	0 .47	0 .50	0 .53	0 .57	0 .60	0 .63	0 .66	1 30
1 40	0 .34	0 .37	0 .40	0 .42	0 .45	0 .48	0 .51	0 .54	0 .57	0 .59	1 40
1 50	0 .31	0 .33	0 .36	0 .39	0 .41	0 .44	0 .46	0 .49	0 .51	0 .54	1 50
2 00	0 .28	0 .31	0 .33	0 .35	0 .38	0 .40	0 .42	0 .45	0 .47	0 .49	2 00
2 15	0 .25	0 .27	0 .29	0 .31	0 .34	0 .36	0 .38	0 .40	0 .42	0 .44	2 15
2 30	0 .23	0 .25	0 .26	0 .28	0 .30	0 .32	0 .34	0 .36	0 .38	0 .40	2 30
2 45	0 .21	0 .22	0 .24	0 .26	0 .27	0 .29	0 .31	0 .33	0 .34	0 .36	2 45
3 00	0 .19	0 .20	0 .22	0 .24	0 .25	0 .27	0 .28	0 .30	0 .31	0 .33	3 00
3 20	0 .17	0 .18	0 .20	0 .21	0 .23	0 .24	0 .25	0 .27	0 .28	0 .30	3 20
3 40	0 .15	0 .17	0 .18	0 .19	0 .21	0 .22	0 .23	0 .24	0 .26	0 .27	3 40
4 00	0 .14	0 .15	0 .16	0 .18	0 .19	0 .20	0 .21	0 .22	0 .24	0 .25	4 00
4 20	0 .13	0 .14	0 .15	0 .16	0 .17	0 .18	0 .20	0 .21	0 .22	0 .23	4 20
4 40	0 .12	0 .13	0 .14	0 .15	0 .16	0 .17	0 .18	0 .19	0 .20	0 .21	4 40
5 00	0 .11	0 .12	0 .13	0 .14	0 .15	0 .16	0 .17	0 .18	0 .19	0 .20	5 00
5 20	0 .11	0 .11	0 .12	0 .13	0 .14	0 .15	0 .16	0 .17	0 .18	0 .19	5 20
5 40	0 .10	0 .11	0 .12	0 .12	0 .13	0 .14	0 .15	0 .16	0 .17	0 .17	5 40
6 00		0 .10	0 .11	0 .12	0 .13	0 .13	0 .14	0 .15	0 .16	0 .16	6 00
6 20			0 .10	0 .11	0 .12	0 .13	0 .13	0 .14	0 .15	0 .16	6 20
6 40				0 .11	0 .11	0 .12	0 .13	0 .13	0 .14	0 .15	6 40
7 00				0 .10	0 .11	0 .11	0 .12	0 .13	0 .13	0 .14	7 00
7 20					0 .10	0 .11	0 .12	0 .12	0 .13	0 .13	7 20
7 40						0 .10	0 .11	0 .12	0 .12	0 .13	7 40
8 00							0 .11	0 .11	0 .12	0 .12	8 00
8 20							0 .10	0 .11	0 .11	0 .12	8 20
8 40								0 .10	0 .11	0 .11	8 40
9 00									0 .10	0 .11	9 00
9 30										0 .10	9 30
10 00											10 00

TABLE 16

Distance by Vertical Angle
Measured Between Waterline at Object and Top of Object

Angle	Height of object above the sea, in **feet** and (meters)										Angle
	110 (33.5)	**115** (35.1)	**120** (36.6)	**125** (38.1)	**130** (39.6)	**135** (41.1)	**140** (42.7)	**145** (44.2)	**150** (45.7)	**155** (47.2)	
° ′	*Miles*	*Miles*	*Miles*	*Miles*	*Miles*	*Miles*	*Miles*	*Miles*	*Miles*	*Miles*	° ′
0 10											0 10
0 11											0 11
0 12											0 12
0 13	4.79	5.00									0 13
0 14	4.45	4.65	4.85								0 14
0 15	4.15	4.34	4.53	4.71	4.90						0 15
0 20	3.11	3.25	3.39	3.54	3.68	3.82	3.96	4.10	4.24	4.38	0 20
0 25	2.49	2.60	2.72	2.83	2.94	3.06	3.17	3.28	3.30	3.51	0 25
0 30	2.07	2.17	2.26	2.36	2.45	2.55	2.64	2.73	2.83	2.92	0 30
0 35	1.78	1.86	1.94	2.02	2.10	2.18	2.26	2.34	2.42	2.51	0 35
0 40	1.56	1.63	1.70	1.77	1.84	1.91	1.98	2.05	2.12	2.19	0 40
0 45	1.30	1.45	1.51	1.57	1.63	1.70	1.76	1.82	1.89	1.95	0 45
0 50	1.24	1.30	1.36	1.41	1.47	1.53	1.58	1.64	1.70	1.75	0 50
0 55	1.13	1.18	1.23	1.29	1.34	1.39	1.44	1.49	1.54	1.59	0 55
1 00	1.04	1.08	1.13	1.18	1.23	1.27	1.32	1.37	1.41	1.46	1 00
1 10	0.89	0.93	0.97	1.01	1.05	1.09	1.13	1.17	1.21	1.25	1 10
1 20	0.78	0.81	0.85	0.88	0.92	0.95	0.99	1.03	1.06	1.10	1 20
1 30	0.69	0.72	0.75	0.79	0.82	0.85	0.88	0.91	0.94	0.97	1 30
1 40	0.62	0.65	0.66	0.71	0.74	0.76	0.79	0.82	0.85	0.88	1 40
1 50	0.57	0.59	0.62	0.64	0.67	0.69	0.72	0.75	0.77	0.80	1 50
2 00	0.52	0.54	0.57	0.59	0.61	0.64	0.66	0.68	0.71	0.73	2 00
2 15	0.46	0.48	0.50	0.52	0.54	0.57	0.59	0.61	0.63	0.65	2 15
2 30	0.41	0.43	0.45	0.47	0.49	0.51	0.53	0.55	0.57	0.58	2 30
2 45	0.38	0.39	0.41	0.43	0.45	0.46	0.48	0.50	0.51	0.53	2 45
3 00	0.35	0.36	0.38	0.39	0.41	0.42	0.44	0.46	0.47	0.49	3 00
3 20	0.31	0.32	0.34	0.35	0.37	0.38	0.40	0.41	0.42	0.44	3 20
3 40	0.28	0.30	0.31	0.32	0.33	0.35	0.36	0.37	0.39	0.40	3 40
4 00	0.26	0.27	0.28	0.29	0.31	0.32	0.33	0.34	0.35	0.36	4 00
4 20	0.24	0.25	0.26	0.27	0.28	0.29	0.30	0.31	0.33	0.34	4 20
4 40	0.22	0.23	0.24	0.25	0.26	0.27	0.28	0.29	0.30	0.31	4 40
5 00	0.21	0.22	0.23	0.24	0.24	0.25	0.26	0.27	0.28	0.29	5 00
5 20	0.19	0.20	0.21	0.22	0.23	0.24	0.25	0.26	0.26	0.27	5 20
5 40	0.18	0.19	0.20	0.21	0.22	0.22	0.23	0.24	0.25	0.26	5 40
6 00	0.17	0.18	0.19	0.20	0.20	0.21	0.22	0.23	0.23	0.24	6 00
6 20	0.16	0.17	0.18	0.19	0.19	0.20	0.21	0.22	0.22	0.23	6 20
6 40	0.15	0.17	0.17	0.18	0.18	0.19	0.20	0.20	0.21	0.22	6 40
7 00	0.15	0.15	0.16	0.17	0.17	0.18	0.19	0.19	0.20	0.21	7 00
7 20	0.14	0.15	0.15	0.16	0.17	0.17	0.18	0.19	0.19	0.20	7 20
7 40	0.13	0.14	0.15	0.15	0.16	0.17	0.17	0.18	0.18	0.19	7 40
8 00	0.13	0.13	0.14	0.15	0.15	0.16	0.16	0.17	0.18	0.18	8 00
8 20	0.12	0.13	0.13	0.14	0.15	0.15	0.16	0.16	0.17	0.17	8 20
8 40	0.12	0.12	0.13	0.13	0.14	0.15	0.15	0.16	0.16	0.17	8 40
9 00	0.11	0.12	0.12	0.13	0.14	0.14	0.15	0.15	0.16	0.16	9 00
9 30	0.11	0.11	0.12	0.13	0.13	0.13	0.14	0.14	0.15	0.15	9 30
10 00	0.10	0.11	0.11	0.12	0.12	0.13	0.13	0.14	0.14	0.14	10 00
10 30		0.10	0.11	0.11	0.12	0.12	0.12	0.13	0.13	0.14	10 30
11 00			0.10	0.11	0.11	0.11	0.12	0.12	0.13	0.13	11 00
11 30				0.10	0.11	0.11	0.11	0.12	0.12	0.13	11 30
12 00					0.10	0.10	0.11	0.11	0.12	0.12	12 00
12 30							0.10	0.11	0.11	0.12	12 30
13 00								0.10	0.11	0.11	13 00
13 30									0.10	0.11	13 30
14 00										0.10	14 00

TABLE 16

Distance by Vertical Angle
Measured Between Waterline at Object and Top of Object

Angle	Height of object above the sea, in **feet** and (meters)										Angle
	160 (48.8)	**165** (50.3)	**175** (53.3)	**185** (56.4)	**195** (59.4)	**200** (61.0)	**225** (68.6)	**250** (76.2)	**275** (83.8)	**300** (91.4)	
° ′	*Miles*	*Miles*	*Miles*	*Miles*	*Miles*	*Miles*	*Miles*	*Miles*	*Miles*	*Miles*	° ′
0 15											0 15
0 20	4.53	4.67	4.95								0 20
0 25	3.62	3.73	3.96	4.19	4.41	4.53					0 25
0 30	3.02	3.11	3.30	3.49	3.68	3.77	4.24	4.71			0 30
0 35	2.59	2.67	2.83	2.99	3.15	3.23	3.64	4.04	4.45	4.85	0 35
0 40	2.26	2.33	2.48	2.62	2.76	2.83	3.18	3.54	3.89	4.24	0 40
0 45	2.01	2.07	2.20	2.33	2.45	2.51	2.83	3.14	3.46	3.77	0 45
0 50	1.81	1.87	1.98	2.09	2.21	2.26	2.55	2.83	3.11	3.39	0 50
0 55	1.65	1.70	1.80	1.90	2.01	2.06	2.31	2.57	2.83	3.09	0 55
1 00	1.51	1.56	1.65	1.74	1.84	1.89	2.12	2.36	2.59	2.83	1 00
1 10	1.20	1.33	1.41	1.50	1.58	1.62	1.82	2.02	2.22	2.42	1 10
1 20	1.13	1.17	1.24	1.31	1.38	1.41	1.59	1.77	1.94	2.12	1 20
1 30	1.01	1.04	1.10	1.16	1.23	1.26	1.41	1.57	1.73	1.89	1 30
1 40	0.91	0.93	0.99	1.05	1.10	1.13	1.27	1.41	1.56	1.70	1 40
1 50	0.82	0.85	0.90	0.95	1.00	1.03	1.16	1.29	1.41	1.54	1 50
2 00	0.75	0.78	0.82	0.87	0.92	0.94	1.06	1.18	1.30	1.41	2 00
2 15	0.67	0.69	0.73	0.77	0.82	0.84	0.94	1.05	1.15	1.26	2 15
2 30	0.60	0.62	0.66	0.70	0.74	0.75	0.85	0.94	1.04	1.13	2 30
2 45	0.55	0.57	0.60	0.63	0.67	0.69	0.77	0.86	0.94	1.03	2 45
3 00	0.50	0.52	0.55	0.58	0.61	0.63	0.71	0.79	0.86	0.94	3 00
3 20	0.45	0.47	0.49	0.52	0.55	0.57	0.64	0.71	0.78	0.85	3 20
3 40	0.41	0.42	0.45	0.48	0.50	0.51	0.58	0.64	0.71	0.77	3 40
4 00	0.38	0.39	0.41	0.44	0.46	0.47	0.53	0.59	0.65	0.71	4 00
4 20	0.35	0.36	0.38	0.40	0.42	0.43	0.49	0.54	0.60	0.65	4 20
4 40	0.32	0.33	0.35	0.37	0.39	0.40	0.45	0.50	0.55	0.60	4 40
5 00	0.30	0.31	0.33	0.35	0.37	0.38	0.42	0.47	0.52	0.56	5 00
5 20	0.28	0.29	0.31	0.33	0.34	0.35	0.40	0.44	0.48	0.53	5 20
5 40	0.27	0.27	0.29	0.31	0.32	0.33	0.37	0.41	0.46	0.50	5 40
6 00	0.25	0.26	0.27	0.29	0.31	0.31	0.35	0.39	0.43	0.47	6 00
6 20	0.24	0.24	0.26	0.27	0.29	0.30	0.33	0.37	0.41	0.44	6 20
6 40	0.23	0.23	0.25	0.26	0.27	0.28	0.32	0.35	0.39	0.42	6 40
7 00	0.21	0.22	0.23	0.25	0.26	0.27	0.30	0.34	0.37	0.40	7 00
7 20	0.20	0.21	0.22	0.24	0.25	0.26	0.29	0.32	0.35	0.38	7 20
7 40	0.20	0.20	0.21	0.23	0.24	0.24	0.28	0.31	0.34	0.37	7 40
8 00	0.19	0.19	0.20	0.22	0.23	0.23	0.26	0.29	0.32	0.35	8 00
8 20	0.18	0.19	0.20	0.21	0.22	0.22	0.25	0.28	0.31	0.34	8 20
8 40	0.17	0.19	0.19	0.20	0.21	0.22	0.24	0.27	0.30	0.32	8 40
9 00	0.17	0.17	0.18	0.19	0.20	0.21	0.23	0.26	0.29	0.31	9 00
9 30	0.16	0.16	0.17	0.18	0.19	0.20	0.22	0.25	0.27	0.30	9 30
10 00	0.15	0.15	0.16	0.17	0.18	0.19	0.21	0.23	0.26	0.28	10 00
10 30	0.14	0.15	0.16	0.16	0.17	0.18	0.20	0.22	0.24	0.27	10 30
11 00	0.14	0.14	0.15	0.16	0.17	0.17	0.19	0.21	0.23	0.25	11 00
11 30	0.13	0.13	0.14	0.15	0.16	0.16	0.18	0.20	0.22	0.24	11 30
12 00	0.12	0.13	0.14	0.14	0.15	0.15	0.17	0.19	0.21	0.23	12 00
12 30	0.12	0.12	0.13	0.14	0.14	0.15	0.17	0.19	0.20	0.22	12 30
13 00	0.11	0.11	0.12	0.13	0.14	0.14	0.16	0.18	0.20	0.21	13 00
13 30	0.11	0.11	0.12	0.13	0.13	0.14	0.15	0.17	0.19	0.21	13 30
14 00	0.11	0.11	0.12	0.12	0.13	0.13	0.15	0.17	0.18	0.20	14 00
14 30	0.10	0.10	0.11	0.12	0.12	0.13	0.14	0.16	0.18	0.19	14 30
15 00			0.11	0.11	0.12	0.12	0.14	0.15	0.17	0.18	15 00
16 00			0.10	0.11	0.11	0.11	0.13	0.14	0.16	0.17	16 00
17 00				0.10	0.10	0.11	0.12	0.13	0.15	0.16	17 00
18 00						0.10	0.11	0.13	0.14	0.15	18 00
19 00							0.11	0.12	0.13	0.14	19 00
20 00							0.10	0.11	0.12	0.14	20 00

TABLE 17

Distance by Vertical Angle
Measured Between Waterline at Object and Sea Horizon Beyond Object

Distance	Height of eye above the sea, in feet										Distance
	5	10	15	20	25	30	35	40	45	50	
Yards	° ′	° ′	° ′	° ′	° ′	° ′	° ′	° ′	° ′	° ′	*Yards*
100	0 55	1 52	2 48	3 45	4 41	5 37	6 34	7 30	8 26	9 21	100
200	27	0 54	1 22	1 50	2 18	2 46	3 15	3 43	4 11	4 39	200
300	17	35	0 54	1 12	1 31	1 49	2 08	2 27	2 45	3 04	300
400	12	26	39	0 53	1 07	1 21	1 35	1 49	2 02	2 16	400
500	9	20	31	42	0 53	1 04	1 15	1 26	1 37	1 48	500
600		16	25	34	43	0 52	1 01	1 10	1 20	1 29	600
700		13	21	29	36	44	0 52	0 59	1 07	1 15	700
800		11	18	24	31	38	45	51	0 58	1 05	800
900		10	16	21	27	33	39	45	51	0 57	900
1, 000			14	19	24	29	35	40	45	51	1, 000
1, 100			12	17	21	26	31	36	41	45	1, 100
1, 200			11	15	19	24	28	32	37	41	1, 200
1, 300			10	14	17	21	25	29	33	37	1, 300
1, 400				12	16	20	23	27	31	34	1, 400
1, 500				11	15	18	21	25	28	32	1, 500
1, 600				10	13	17	20	23	26	29	1, 600
1, 700					12	15	18	21	24	27	1, 700
1, 800					11	14	17	20	23	25	1, 800
1, 900					11	13	16	18	21	24	1, 900
2, 000					10	12	15	17	20	22	2, 000
2, 100						11	14	16	18	21	2, 100
2, 200						11	13	15	17	20	2, 200
2, 300						10	12	14	16	19	2, 300
2, 400							11	13	15	18	2, 400
2, 500							11	13	15	17	2, 500
2, 600							10	12	14	16	2, 600
2, 700								11	13	15	2, 700
2, 800								11	12	14	2, 800
2, 900								10	12	14	2, 900
3, 000									11	13	3, 000
3, 100									11	12	3, 100
3, 200									10	12	3, 200
3, 300										11	3, 300
3, 400										11	3, 400
3, 500										10	3, 500

TABLE 17

Distance by Vertical Angle
Measured Between Waterline at Object and Sea Horizon Beyond Object

Distance	Height of eye above the sea, in feet										Distance
	55	60	65	70	75	80	85	90	95	100	
Yards	° ′	° ′	° ′	° ′	° ′	° ′	° ′	° ′	° ′	° ′	*Yards*
100	10 16	11 11	12 06	13 00	13 54	14 48	15 41	16 34	17 26	18 17	100
200	5 07	5 35	6 03	6 31	6 59	7 27	7 55	8 23	8 51	9 18	200
300	3 23	3 41	4 00	4 19	4 38	4 56	5 15	5 34	5 52	6 11	300
400	2 30	2 44	2 58	3 12	3 26	3 40	3 54	4 08	4 22	4 36	400
500	1 59	2 10	2 21	2 32	2 43	2 55	3 06	3 17	3 28	3 39	500
600	1 38	1 47	1 56	2 06	2 15	2 24	2 33	2 43	2 52	3 01	600
700	1 23	1 31	1 39	1 47	1 54	2 02	2 10	2 18	2 26	2 34	700
800	1 12	1 19	1 25	1 32	1 39	1 46	1 53	2 00	2 07	2 14	800
900	1 03	1 09	1 15	1 21	1 27	1 33	1 39	1 46	1 52	1 58	900
1, 000	0 56	1 01	1 07	1 12	1 18	1 23	1 29	1 34	1 40	1 45	1, 000
1, 100	50	0 55	1 00	1 05	1 10	1 15	1 20	1 25	1 30	1 35	1, 100
1, 200	46	50	0 55	0 59	1 03	1 08	1 12	1 17	1 22	1 26	1, 200
1, 300	42	46	50	54	0 58	1 02	1 06	1 10	1 15	1 19	1, 300
1, 400	38	42	46	49	53	0 57	1 01	1 05	1 09	1 12	1, 400
1, 500	35	39	42	46	49	53	0 56	1 00	1 03	1 07	1, 500
1, 600	33	36	39	42	46	49	52	0 56	0 59	1 02	1, 600
1, 700	30	33	36	39	43	46	49	52	55	0 58	1, 700
1, 800	28	31	34	37	40	43	46	48	51	54	1, 800
1, 900	26	29	32	35	37	40	43	45	48	51	1, 900
2, 000	25	27	30	32	35	38	40	43	45	48	2, 000
2, 100	23	26	28	31	33	35	38	40	43	45	2, 100
2, 200	22	24	27	29	31	33	36	38	40	43	2, 200
2, 300	21	23	25	27	29	32	34	36	38	41	2, 300
2, 400	20	22	24	26	28	30	32	34	36	39	2, 400
2, 500	19	21	23	25	27	29	31	33	35	37	2, 500
2, 600	18	19	21	23	25	27	29	31	33	35	2, 600
2, 700	17	19	20	22	24	26	28	30	31	33	2, 700
2, 800	16	18	19	21	23	25	26	28	30	32	2, 800
2, 900	15	17	18	20	22	24	25	27	29	30	2, 900
3, 000	14	16	18	19	21	23	24	26	27	29	3, 000
3, 100	14	15	17	18	20	22	23	25	26	28	3, 100
3, 200	13	15	16	18	19	21	22	24	25	27	3, 200
3, 300	13	14	15	17	18	20	21	23	24	26	3, 300
3, 400	12	13	15	16	18	19	20	22	23	25	3, 400
3, 500	12	13	14	16	17	18	20	21	22	24	3, 500
3, 600	11	12	14	15	16	18	19	20	22	23	3, 600
3, 700	11	12	13	14	16	17	18	19	21	22	3, 700
3, 800	10	11	13	14	15	16	17	19	20	21	3, 800
3, 900		11	12	13	14	16	17	18	19	21	3, 900
4, 000		11	12	13	14	15	16	17	19	20	4, 000
4, 100		10	11	12	13	15	16	17	18	19	4, 100
4, 200			11	12	13	14	15	16	17	18	4, 200
4, 300			10	11	12	14	15	16	17	18	4, 300
4, 400			10	11	12	13	14	15	16	17	4, 400
4, 500			10	11	12	13	14	15	16	17	4, 500
4, 600				10	11	12	13	14	15	16	4, 600
4, 700					11	12	13	14	15	16	4, 700
4, 800					11	11	12	13	14	15	4, 800
4, 900					10	11	12	13	14	15	4, 900
5, 000					10	11	12	12	13	14	5, 000

TABLE 18
Distance of an Object by Two Bearings

Difference between the course and second bearing	Difference between the course and first bearing													
	20°		22°		24°		26°		28°		30°		32°	
°														
30	1.97	0.98												
32	1.64	0.87	2.16	1.14										
34	1.41	0.79	1.80	1.01	2.34	1.31								
36	1.24	0.73	1.55	0.91	1.96	1.15	2.52	1.48						
38	1.11	0.68	1.36	0.84	1.68	1.04	2.11	1.30	2.70	1.66				
40	1.00	0.64	1.21	0.78	1.48	0.95	1.81	1.16	2.26	1.45	2.88	1.85		
42	0.91	0.61	1.10	0.73	1.32	0.88	1.59	1.06	1.94	1.30	2.40	1.61	3.05	2.04
44	0.84	0.58	1.00	0.69	1.19	0.83	1.42	0.98	1.70	1.18	2.07	1.44	2.55	1.77
46	0.78	0.56	0.92	0.66	1.09	0.78	1.28	0.92	1.52	1.09	1.81	1.30	2.19	1.58
48	0.73	0.54	0.85	0.64	1.00	0.74	1.17	0.87	1.37	1.02	1.62	1.20	1.92	1.43
50	0.68	0.52	0.80	0.61	0.93	0.71	1.08	0.83	1.25	0.96	1.46	1.12	1.71	1.31
52	0.65	0.51	0.75	0.59	0.87	0.68	1.00	0.79	1.15	0.91	1.33	1.05	1.55	1.22
54	0.61	0.49	0.71	0.57	0.81	0.66	0.93	0.76	1.07	0.87	1.23	0.99	1.41	1.14
56	0.58	0.48	0.67	0.56	0.77	0.64	0.88	0.73	1.00	0.83	1.14	0.95	1.30	1.08
58	0.56	0.47	0.64	0.54	0.73	0.62	0.83	0.70	0.94	0.80	1.07	0.90	1.21	1.03
60	0.53	0.46	0.61	0.53	0.69	0.60	0.78	0.68	0.89	0.77	1.00	0.87	1.13	0.98
62	0.51	0.45	0.58	0.51	0.66	0.58	0.75	0.66	0.84	0.74	0.94	0.83	1.06	0.94
64	0.49	0.44	0.56	0.50	0.63	0.57	0.71	0.64	0.80	0.72	0.89	0.80	1.00	0.90
66	0.48	0.43	0.54	0.49	0.61	0.56	0.68	0.62	0.76	0.70	0.85	0.78	0.95	0.87
68	0.46	0.43	0.52	0.48	0.59	0.54	0.66	0.61	0.73	0.68	0.81	0.75	0.90	0.84
70	0.45	0.42	0.50	0.47	0.57	0.53	0.63	0.59	0.70	0.66	0.78	0.73	0.86	0.81
72	0.43	0.41	0.49	0.47	0.55	0.52	0.61	0.58	0.68	0.64	0.75	0.71	0.82	0.78
74	0.42	0.41	0.48	0.46	0.53	0.51	0.59	0.57	0.65	0.63	0.72	0.69	0.79	0.76
76	0.41	0.40	0.46	0.45	0.52	0.50	0.57	0.56	0.63	0.61	0.70	0.67	0.76	0.74
78	0.40	0.39	0.45	0.44	0.50	0.49	0.56	0.54	0.61	0.60	0.67	0.66	0.74	0.72
80	0.39	0.39	0.44	0.44	0.49	0.48	0.54	0.53	0.60	0.59	0.65	0.64	0.71	0.70
82	0.39	0.38	0.43	0.43	0.48	0.47	0.53	0.52	0.58	0.57	0.63	0.63	0.69	0.69
84	0.38	0.38	0.42	0.42	0.47	0.47	0.52	0.51	0.57	0.56	0.62	0.61	0.67	0.67
86	0.37	0.37	0.42	0.42	0.46	0.46	0.51	0.50	0.55	0.55	0.60	0.60	0.66	0.65
88	0.37	0.37	0.41	0.41	0.45	0.45	0.50	0.50	0.54	0.54	0.59	0.59	0.64	0.64
90	0.36	0.36	0.40	0.40	0.45	0.45	0.49	0.49	0.53	0.53	0.58	0.58	0.62	0.62
92	0.36	0.36	0.40	0.40	0.44	0.44	0.48	0.48	0.52	0.52	0.57	0.57	0.61	0.61
94	0.36	0.35	0.39	0.39	0.43	0.43	0.47	0.47	0.51	0.51	0.56	0.55	0.60	0.60
96	0.35	0.35	0.39	0.39	0.43	0.43	0.47	0.46	0.51	0.50	0.55	0.54	0.59	0.59
98	0.35	0.35	0.39	0.38	0.42	0.42	0.46	0.46	0.50	0.50	0.54	0.53	0.58	0.57
100	0.35	0.34	0.38	0.38	0.42	0.41	0.46	0.45	0.49	0.49	0.53	0.52	0.57	0.56
102	0.35	0.34	0.38	0.37	0.42	0.41	0.45	0.44	0.49	0.48	0.53	0.51	0.56	0.55
104	0.34	0.33	0.38	0.37	0.41	0.40	0.45	0.43	0.48	0.47	0.52	0.50	0.56	0.54
106	0.34	0.33	0.38	0.36	0.41	0.39	0.45	0.43	0.48	0.46	0.52	0.50	0.55	0.53
108	0.34	0.32	0.38	0.36	0.41	0.39	0.44	0.42	0.48	0.45	0.51	0.49	0.55	0.52
110	0.34	0.32	0.37	0.35	0.41	0.38	0.44	0.41	0.47	0.44	0.51	0.48	0.54	0.51
112	0.34	0.32	0.37	0.35	0.41	0.38	0.44	0.41	0.47	0.44	0.50	0.47	0.54	0.50
114	0.34	0.31	0.37	0.34	0.41	0.37	0.44	0.40	0.47	0.43	0.50	0.46	0.54	0.49
116	0.34	0.31	0.38	0.34	0.41	0.37	0.44	0.39	0.47	0.42	0.50	0.45	0.53	0.48
118	0.35	0.31	0.38	0.33	0.41	0.36	0.44	0.39	0.47	0.41	0.50	0.44	0.53	0.47
120	0.35	0.30	0.38	0.33	0.41	0.36	0.44	0.38	0.47	0.41	0.50	0.43	0.53	0.46
122	0.35	0.30	0.38	0.32	0.41	0.35	0.44	0.37	0.47	0.40	0.50	0.42	0.53	0.45
124	0.35	0.29	0.38	0.32	0.41	0.34	0.44	0.37	0.47	0.39	0.50	0.42	0.53	0.44
126	0.36	0.29	0.39	0.31	0.42	0.34	0.45	0.36	0.47	0.38	0.50	0.41	0.53	0.43
128	0.36	0.28	0.39	0.31	0.42	0.33	0.45	0.35	0.48	0.38	0.50	0.40	0.53	0.42
130	0.36	0.28	0.39	0.30	0.42	0.32	0.45	0.35	0.48	0.37	0.51	0.39	0.54	0.41
132	0.37	0.27	0.40	0.30	0.43	0.32	0.46	0.34	0.48	0.36	0.51	0.38	0.54	0.40
134	0.37	0.27	0.40	0.29	0.43	0.31	0.46	0.33	0.49	0.35	0.52	0.37	0.54	0.39
136	0.38	0.26	0.41	0.28	0.44	0.30	0.47	0.32	0.49	0.34	0.52	0.36	0.55	0.38
138	0.39	0.26	0.42	0.28	0.45	0.30	0.47	0.32	0.50	0.33	0.53	0.35	0.55	0.37
140	0.39	0.25	0.42	0.27	0.45	0.29	0.48	0.31	0.51	0.33	0.53	0.34	0.56	0.36
142	0.40	0.25	0.43	0.27	0.46	0.28	0.49	0.30	0.51	0.32	0.54	0.33	0.56	0.35
144	0.41	0.24	0.44	0.26	0.47	0.28	0.50	0.29	0.52	0.31	0.55	0.32	0.57	0.34
146	0.42	0.24	0.45	0.25	0.48	0.27	0.51	0.28	0.53	0.30	0.56	0.31	0.58	0.32
148	0.43	0.23	0.46	0.25	0.49	0.26	0.52	0.27	0.54	0.29	0.57	0.30	0.59	0.31
150	0.45	0.22	0.48	0.24	0.50	0.25	0.53	0.26	0.55	0.28	0.58	0.29	0.60	0.30
152	0.46	0.22	0.49	0.23	0.52	0.24	0.54	0.25	0.57	0.27	0.59	0.28	0.61	0.29
154	0.48	0.21	0.50	0.22	0.53	0.23	0.56	0.24	0.58	0.25	0.60	0.26	0.62	0.27
156	0.49	0.20	0.52	0.21	0.55	0.22	0.57	0.23	0.60	0.24	0.62	0.25	0.64	0.26
158	0.51	0.19	0.54	0.20	0.57	0.21	0.59	0.22	0.61	0.23	0.63	0.24	0.66	0.25
160	0.53	0.18	0.56	0.19	0.59	0.20	0.61	0.21	0.63	0.22	0.65	0.22	0.67	0.23

TABLE 18
Distance of an Object by Two Bearings

Difference between the course and second bearing	Difference between the course and first bearing													
	34°		36°		38°		40°		42°		44°		46°	
°														
44	3.22	2.24												
46	2.69	1.93	3.39	2.43										
48	2.31	1.72	2.83	2.10	3.55	2.63								
50	2.03	1.55	2.43	1.86	2.96	2.27	3.70	2.84						
52	1.81	1.43	2.13	1.68	2.54	2.01	3.09	2.44	3.85	3.04				
54	1.63	1.32	1.90	1.54	2.23	1.81	2.66	2.15	3.22	2.60	4.00	3.24		
56	1.49	1.24	1.72	1.42	1.99	1.65	2.33	1.93	2.77	2.29	3.34	2.77	4.14	3.43
58	1.37	1.17	1.57	1.33	1.80	1.53	2.08	1.76	2.43	2.06	2.87	2.44	3.46	2.93
60	1.28	1.10	1.45	1.25	1.64	1.42	1.88	1.63	2.17	1.88	2.52	2.18	2.97	2.57
62	1.19	1.05	1.34	1.18	1.51	1.34	1.72	1.52	1.96	1.73	2.25	1.98	2.61	2.30
64	1.12	1.01	1.25	1.13	1.40	1.26	1.58	1.42	1.79	1.61	2.03	1.83	2.33	2.09
66	1.06	0.96	1.18	1.07	1.31	1.20	1.47	1.34	1.65	1.51	1.85	1.69	2.10	1.92
68	1.00	0.93	1.11	1.03	1.23	1.14	1.37	1.27	1.53	1.42	1.71	1.58	1.92	1.78
70	0.95	0.89	1.05	0.99	1.16	1.09	1.29	1.21	1.43	1.34	1.58	1.49	1.77	1.66
72	0.91	0.86	1.00	0.95	1.10	1.05	1.21	1.15	1.34	1.27	1.48	1.41	1.64	1.56
74	0.87	0.84	0.95	0.92	1.05	1.01	1.15	1.10	1.26	1.21	1.39	1.34	1.53	1.47
76	0.84	0.81	0.91	0.89	1.00	0.97	1.09	1.06	1.20	1.16	1.31	1.27	1.44	1.40
78	0.80	0.79	0.88	0.86	0.96	0.94	1.04	1.02	1.14	1.11	1.24	1.22	1.36	1.33
80	0.78	0.77	0.85	0.83	0.92	0.91	1.00	0.98	1.09	1.07	1.18	1.16	1.28	1.27
82	0.75	0.75	0.82	0.81	0.89	0.88	0.96	0.95	1.04	1.03	1.13	1.12	1.22	1.21
84	0.73	0.73	0.79	0.79	0.86	0.85	0.93	0.92	1.00	0.99	1.08	1.07	1.17	1.16
86	0.71	0.71	0.77	0.77	0.83	0.83	0.89	0.89	0.96	0.96	1.04	1.04	1.12	1.12
88	0.69	0.69	0.75	0.75	0.80	0.80	0.86	0.86	0.93	0.93	1.00	1.00	1.08	1.07
90	0.67	0.67	0.73	0.73	0.78	0.78	0.84	0.84	0.90	0.90	0.97	0.97	1.04	1.04
92	0.66	0.66	0.71	0.71	0.76	0.76	0.82	0.82	0.87	0.87	0.93	0.93	1.00	1.00
94	0.65	0.64	0.69	0.69	0.74	0.74	0.79	0.79	0.85	0.85	0.91	0.90	0.97	0.97
96	0.63	0.63	0.68	0.67	0.73	0.72	0.78	0.77	0.83	0.82	0.88	0.88	0.94	0.93
98	0.62	0.62	0.67	0.66	0.71	0.70	0.76	0.75	0.81	0.80	0.86	0.85	0.91	0.90
100	0.61	0.60	0.65	0.64	0.70	0.69	0.74	0.73	0.79	0.78	0.84	0.83	0.89	0.88
102	0.60	0.59	0.64	0.63	0.68	0.67	0.73	0.71	0.77	0.76	0.82	0.80	0.87	0.85
104	0.60	0.58	0.63	0.61	0.67	0.65	0.72	0.69	0.76	0.74	0.80	0.78	0.85	0.82
106	0.59	0.57	0.63	0.60	0.66	0.64	0.70	0.68	0.74	0.72	0.79	0.76	0.83	0.80
108	0.58	0.55	0.62	0.59	0.66	0.62	0.69	0.66	0.73	0.70	0.77	0.74	0.81	0.77
110	0.58	0.54	0.61	0.57	0.65	0.61	0.68	0.64	0.72	0.68	0.76	0.71	0.80	0.75
112	0.57	0.53	0.61	0.56	0.64	0.59	0.68	0.63	0.71	0.66	0.75	0.69	0.79	0.73
114	0.57	0.52	0.60	0.55	0.63	0.58	0.67	0.61	0.70	0.64	0.74	0.68	0.78	0.71
116	0.56	0.51	0.60	0.54	0.63	0.57	0.66	0.60	0.70	0.63	0.73	0.66	0.77	0.69
118	0.56	0.50	0.59	0.52	0.63	0.55	0.66	0.58	0.69	0.61	0.72	0.64	0.76	0.67
120	0.56	0.49	0.59	0.51	0.62	0.54	0.65	0.57	0.68	0.59	0.72	0.62	0.75	0.65
122	0.56	0.47	0.59	0.50	0.62	0.53	0.65	0.55	0.68	0.58	0.71	0.60	0.74	0.63
124	0.56	0.46	0.59	0.49	0.62	0.51	0.65	0.54	0.68	0.56	0.71	0.58	0.74	0.61
126	0.56	0.45	0.59	0.48	0.62	0.50	0.64	0.52	0.67	0.54	0.70	0.57	0.73	0.59
128	0.56	0.44	0.59	0.46	0.62	0.49	0.64	0.51	0.67	0.53	0.70	0.55	0.73	0.57
130	0.56	0.43	0.59	0.45	0.62	0.47	0.64	0.49	0.67	0.51	0.70	0.53	0.72	0.55
132	0.56	0.42	0.59	0.44	0.62	0.46	0.64	0.48	0.67	0.50	0.70	0.52	0.72	0.54
134	0.57	0.41	0.59	0.43	0.62	0.45	0.64	0.46	0.67	0.48	0.69	0.50	0.72	0.52
136	0.57	0.40	0.60	0.41	0.62	0.43	0.65	0.45	0.67	0.47	0.70	0.48	0.72	0.50
138	0.58	0.39	0.60	0.40	0.63	0.42	0.65	0.43	0.67	0.45	0.70	0.47	0.72	0.48
140	0.58	0.37	0.61	0.39	0.63	0.40	0.65	0.42	0.68	0.43	0.70	0.45	0.72	0.46
142	0.59	0.36	0.61	0.38	0.63	0.39	0.66	0.41	0.68	0.42	0.70	0.43	0.72	0.45
144	0.60	0.35	0.62	0.36	0.64	0.38	0.66	0.39	0.68	0.40	0.71	0.41	0.73	0.43
146	0.60	0.34	0.63	0.35	0.65	0.36	0.67	0.37	0.69	0.39	0.71	0.40	0.73	0.41
148	0.61	0.32	0.63	0.34	0.66	0.35	0.68	0.36	0.70	0.37	0.72	0.38	0.74	0.39
150	0.62	0.31	0.64	0.32	0.66	0.33	0.68	0.34	0.70	0.35	0.72	0.36	0.74	0.37
152	0.63	0.30	0.65	0.31	0.67	0.32	0.69	0.33	0.71	0.33	0.73	0.34	0.75	0.35
154	0.65	0.28	0.67	0.29	0.68	0.30	0.70	0.31	0.72	0.32	0.74	0.32	0.76	0.33
156	0.66	0.27	0.68	0.28	0.70	0.28	0.72	0.29	0.73	0.30	0.75	0.30	0.77	0.31
158	0.67	0.25	0.69	0.26	0.71	0.27	0.73	0.27	0.74	0.28	0.76	0.28	0.78	0.29
160	0.69	0.24	0.71	0.24	0.73	0.25	0.74	0.25	0.76	0.26	0.77	0.26	0.79	0.27

TABLE 18
Distance of an Object by Two Bearings

Difference between the course and second bearing	Difference between the course and first bearing													
	48°		50°		52°		54°		56°		58°		60°	
°														
58	4.28	3.63												
60	3.57	3.10	4.41	3.82										
62	3.07	2.71	3.68	3.25	4.54	4.01								
64	2.70	2.42	3.17	2.85	3.79	3.41	4.66	4.19						
66	2.40	2.20	2.78	2.54	3.26	2.98	3.89	3.55	4.77	4.36				
68	2.17	2.01	2.48	2.30	2.86	2.65	3.34	3.10	3.99	3.71	4.88	4.53		
70	1.98	1.86	2.24	2.10	2.55	2.39	2.94	2.76	3.43	3.22	4.08	3.83	4.99	4.69
72	1.83	1.74	2.04	1.94	2.30	2.19	2.62	2.49	3.01	2.86	3.51	3.33	4.17	3.96
74	1.70	1.63	1.88	1.81	2.10	2.02	2.37	2.27	2.68	2.58	3.08	2.96	3.58	3.44
76	1.58	1.54	1.75	1.70	1.94	1.88	2.16	2.10	2.42	2.35	2.74	2.66	3.14	3.05
78	1.49	1.45	1.63	1.60	1.80	1.76	1.99	1.95	2.21	2.16	2.48	2.43	2.80	2.74
80	1.40	1.38	1.53	1.51	1.68	1.65	1.85	1.82	2.04	2.01	2.26	2.23	2.53	2.49
82	1.33	1.32	1.45	1.43	1.58	1.56	1.72	1.71	1.89	1.87	2.08	2.06	2.31	2.29
84	1.26	1.26	1.37	1.36	1.49	1.48	1.62	1.61	1.77	1.76	1.93	1.92	2.13	2.12
86	1.21	1.20	1.30	1.30	1.41	1.41	1.53	1.52	1.66	1.65	1.81	1.80	1.98	1.97
88	1.16	1.16	1.24	1.24	1.34	1.34	1.45	1.45	1.56	1.56	1.70	1.70	1.84	1.84
90	1.11	1.11	1.19	1.19	1.28	1.28	1.38	1.38	1.48	1.48	1.60	1.60	1.73	1.73
92	1.07	1.07	1.14	1.14	1.23	1.23	1.31	1.31	1.41	1.41	1.52	1.52	1.63	1.63
94	1.03	1.03	1.10	1.10	1.18	1.17	1.26	1.26	1.35	1.34	1.44	1.44	1.55	1.54
96	1.00	0.99	1.06	1.06	1.13	1.13	1.21	1.20	1.29	1.28	1.38	1.37	1.47	1.47
98	0.97	0.96	1.03	1.02	1.10	1.08	1.16	1.15	1.24	1.23	1.32	1.31	1.41	1.39
100	0.94	0.93	1.00	0.98	1.06	1.04	1.12	1.11	1.19	1.18	1.27	1.25	1.35	1.33
102	0.92	0.90	0.97	0.95	1.03	1.01	1.09	1.06	1.15	1.13	1.22	1.19	1.29	1.27
104	0.90	0.87	0.95	0.92	1.00	0.97	1.06	1.02	1.12	1.08	1.18	1.14	1.25	1.21
106	0.88	0.84	0.92	0.89	0.97	0.94	1.03	0.99	1.09	1.04	1.14	1.10	1.20	1.16
108	0.86	0.82	0.90	0.86	0.95	0.90	1.00	0.95	1.05	1.00	1.11	1.05	1.17	1.11
110	0.84	0.79	0.88	0.83	0.93	0.87	0.98	0.92	1.02	0.96	1.08	1.01	1.13	1.06
112	0.83	0.77	0.87	0.80	0.91	0.84	0.95	0.88	1.00	0.93	1.05	0.97	1.10	1.02
114	0.81	0.74	0.85	0.78	0.89	0.82	0.93	0.85	0.98	0.89	1.02	0.93	1.07	0.98
116	0.80	0.72	0.84	0.75	0.88	0.79	0.92	0.82	0.96	0.85	1.00	0.90	1.04	0.94
118	0.79	0.70	0.83	0.73	0.86	0.76	0.90	0.79	0.94	0.83	0.98	0.86	1.02	0.90
120	0.78	0.68	0.82	0.71	0.85	0.74	0.89	0.77	0.91	0.80	0.96	0.83	1.00	0.87
122	0.77	0.66	0.81	0.68	0.84	0.71	0.87	0.74	0.90	0.77	0.95	0.80	0.98	0.83
124	0.77	0.63	0.80	0.66	0.83	0.69	0.86	0.71	0.90	0.74	0.93	0.77	0.96	0.80
126	0.76	0.61	0.79	0.64	0.82	0.66	0.85	0.69	0.88	0.71	0.91	0.74	0.95	0.77
128	0.75	0.59	0.78	0.62	0.81	0.64	0.84	0.66	0.87	0.69	0.90	0.71	0.93	0.74
130	0.75	0.57	0.78	0.60	0.81	0.62	0.83	0.64	0.86	0.66	0.89	0.68	0.92	0.71
132	0.75	0.56	0.77	0.57	0.80	0.59	0.83	0.61	0.85	0.64	0.88	0.66	0.91	0.68
134	0.74	0.54	0.77	0.55	0.80	0.57	0.82	0.59	0.85	0.61	0.87	0.63	0.90	0.65
136	0.74	0.52	0.77	0.53	0.80	0.55	0.82	0.57	0.84	0.58	0.87	0.60	0.89	0.62
138	0.74	0.50	0.77	0.51	0.79	0.53	0.81	0.54	0.84	0.56	0.86	0.58	0.89	0.59
140	0.74	0.48	0.77	0.49	0.79	0.51	0.81	0.52	0.83	0.54	0.86	0.55	0.88	0.57
142	0.74	0.46	0.77	0.47	0.79	0.49	0.81	0.50	0.83	0.51	0.85	0.52	0.87	0.54
144	0.75	0.44	0.77	0.45	0.79	0.46	0.81	0.48	0.83	0.49	0.85	0.50	0.87	0.51
146	0.75	0.42	0.77	0.43	0.79	0.44	0.81	0.45	0.83	0.46	0.85	0.47	0.87	0.49
148	0.76	0.40	0.77	0.41	0.79	0.42	0.81	0.43	0.83	0.44	0.85	0.45	0.87	0.46
150	0.76	0.38	0.78	0.39	0.80	0.40	0.81	0.41	0.83	0.42	0.85	0.42	0.87	0.43
152	0.77	0.36	0.78	0.37	0.80	0.38	0.82	0.38	0.83	0.39	0.85	0.40	0.87	0.41
154	0.77	0.34	0.79	0.35	0.81	0.35	0.82	0.36	0.84	0.37	0.85	0.37	0.87	0.38
156	0.78	0.32	0.80	0.32	0.81	0.33	0.83	0.34	0.84	0.34	0.86	0.35	0.87	0.35
158	0.79	0.30	0.81	0.30	0.82	0.31	0.83	0.31	0.85	0.32	0.86	0.32	0.87	0.33
160	0.80	0.27	0.82	0.28	0.83	0.28	0.84	0.29	0.85	0.29	0.86	0.30	0.88	0.30

TABLE 18
Distance of an Object by Two Bearings

Difference between the course and second bearing	Difference between the course and first bearing													
	62°		64°		66°		68°		70°		72°		74°		76°	
°																
72	5.08	4.84														
74	4.25	4.08	5.18	4.98												
76	3.65	3.54	4.32	4.19	5.26	5.10										
78	3.20	3.13	3.72	3.63	4.39	4.30	5.34	5.22								
80	2.86	2.81	3.26	3.21	3.78	3.72	4.46	4.39	5.41	5.33						
82	2.58	2.56	2.91	2.88	3.31	3.28	3.83	3.80	4.52	4.48	5.48	5.42				
84	2.36	2.34	2.63	2.61	2.96	2.94	3.36	3.35	3.88	3.86	4.57	4.55	5.54	5.51		
86	2.17	2.17	2.40	2.39	2.67	2.66	3.00	2.99	3.41	3.40	3.93	3.92	4.62	4.61	5.59	5.57
88	2.01	2.01	2.21	2.21	2.44	2.44	2.71	2.71	3.04	3.04	3.45	3.45	3.97	3.97	4.67	4.66
90	1.88	1.88	2.05	2.05	2.25	2.25	2.48	2.48	2.75	2.75	3.08	3.08	3.49	3.49	4.01	4.01
92	1.77	1.76	1.91	1.91	2.08	2.08	2.28	2.28	2.51	2.51	2.78	2.78	3.11	3.11	3.52	3.52
94	1.67	1.66	1.80	1.79	1.95	1.94	2.12	2.11	2.31	2.30	2.54	2.53	2.81	2.80	3.14	3.13
96	1.58	1.57	1.70	1.69	1.83	1.82	1.97	1.96	2.14	2.13	2.34	2.33	2.57	2.55	2.84	2.82
98	1.50	1.49	1.61	1.59	1.72	1.71	1.85	1.84	2.00	1.98	2.17	2.15	2.36	2.34	2.59	2.56
100	1.43	1.41	1.53	1.51	1.63	1.61	1.75	1.72	1.88	1.85	2.03	2.00	2.19	2.16	2.39	2.35
102	1.37	1.34	1.46	1.43	1.55	1.52	1.66	1.62	1.77	1.73	1.90	1.86	2.05	2.00	2.21	2.16
104	1.32	1.28	1.40	1.36	1.48	1.44	1.58	1.53	1.68	1.63	1.79	1.74	1.92	1.87	2.07	2.01
106	1.27	1.22	1.34	1.29	1.42	1.37	1.51	1.45	1.60	1.54	1.70	1.63	1.81	1.74	1.94	1.87
108	1.23	1.17	1.29	1.23	1.37	1.30	1.44	1.37	1.53	1.45	1.62	1.54	1.72	1.63	1.83	1.74
110	1.19	1.12	1.25	1.17	1.32	1.24	1.39	1.30	1.46	1.37	1.54	1.45	1.64	1.54	1.74	1.63
112	1.15	1.07	1.21	1.12	1.27	1.18	1.33	1.24	1.40	1.30	1.48	1.37	1.56	1.45	1.65	1.53
114	1.12	1.02	1.17	1.07	1.23	1.12	1.29	1.18	1.35	1.24	1.42	1.30	1.50	1.37	1.58	1.44
116	1.09	0.98	1.14	1.03	1.19	1.07	1.25	1.12	1.31	1.17	1.37	1.23	1.44	1.29	1.51	1.36
118	1.07	0.94	1.11	0.98	1.16	1.02	1.21	1.07	1.26	1.12	1.32	1.17	1.38	1.22	1.45	1.28
120	1.04	0.90	1.08	0.94	1.13	0.98	1.18	1.02	1.23	1.06	1.28	1.11	1.34	1.16	1.40	1.21
122	1.02	0.86	1.06	0.90	1.10	0.93	1.15	0.97	1.19	1.01	1.24	1.05	1.29	1.10	1.35	1.14
124	1.00	0.83	1.04	0.86	1.08	0.89	1.12	0.93	1.16	0.96	1.21	1.00	1.25	1.04	1.31	1.08
126	0.98	0.79	1.02	0.82	1.05	0.85	1.09	0.88	1.13	0.92	1.18	0.95	1.22	0.99	1.27	1.02
128	0.97	0.76	1.00	0.79	1.03	0.82	1.07	0.84	1.11	0.87	1.15	0.90	1.19	0.94	1.23	0.97
130	0.95	0.73	0.98	0.75	1.02	0.78	1.05	0.80	1.09	0.83	1.12	0.86	1.16	0.89	1.20	0.92
132	0.94	0.70	0.97	0.72	1.00	0.74	1.03	0.77	1.06	0.79	1.10	0.82	1.13	0.84	1.17	0.87
134	0.93	0.67	0.96	0.69	0.99	0.71	1.01	0.73	1.04	0.75	1.08	0.77	1.11	0.80	1.14	0.82
136	0.92	0.64	0.95	0.66	0.97	0.68	1.00	0.69	1.03	0.71	1.06	0.74	1.09	0.76	1.12	0.78
138	0.91	0.61	0.94	0.63	0.96	0.64	0.99	0.66	1.01	0.68	1.04	0.70	1.07	0.72	1.10	0.74
140	0.90	0.58	0.93	0.60	0.95	0.61	0.97	0.63	1.00	0.64	1.03	0.66	1.05	0.68	1.08	0.69
142	0.90	0.55	0.92	0.57	0.94	0.58	0.96	0.59	0.99	0.61	1.01	0.62	1.04	0.64	1.06	0.65
144	0.89	0.52	0.91	0.54	0.93	0.55	0.96	0.56	0.98	0.57	1.00	0.59	1.02	0.60	1.05	0.62
146	0.89	0.50	0.91	0.51	0.93	0.52	0.95	0.53	0.97	0.54	0.99	0.55	1.01	0.57	1.03	0.58
148	0.89	0.47	0.90	0.48	0.92	0.49	0.94	0.50	0.96	0.51	0.98	0.52	1.00	0.53	1.02	0.54
150	0.88	0.44	0.90	0.45	0.92	0.46	0.94	0.47	0.95	0.48	0.97	0.49	0.99	0.50	1.01	0.50
152	0.88	0.41	0.90	0.42	0.92	0.43	0.93	0.44	0.95	0.45	0.97	0.45	0.98	0.46	1.00	0.47
154	0.88	0.39	0.90	0.39	0.91	0.40	0.93	0.41	0.94	0.41	0.96	0.42	0.98	0.43	0.99	0.43
156	0.89	0.36	0.90	0.37	0.91	0.37	0.93	0.38	0.94	0.38	0.96	0.39	0.97	0.39	0.99	0.40
158	0.89	0.33	0.90	0.34	0.91	0.34	0.93	0.35	0.94	0.35	0.95	0.36	0.97	0.36	0.98	0.37
160	0.89	0.30	0.90	0.31	0.91	0.31	0.93	0.32	0.94	0.32	0.95	0.33	0.96	0.33	0.98	0.33

TABLE 18
Distance of an Object by Two Bearings

Difference between the course and second bearing	Difference between the course and first bearing															
	78°		80°		82°		84°		86°		88°		90°		92°	
°																
88	5. 63	5. 63														
90	4. 70	4. 70	5. 67	5. 67												
92	4. 04	4. 04	4. 74	4. 73	5. 70	5. 70										
94	3. 55	3. 54	4. 07	4. 06	4. 76	4. 75	5. 73	5. 71								
96	3. 17	3. 15	3. 57	3. 55	4. 09	4. 07	4. 78	4. 76	5. 74	5. 71						
98	2. 86	2. 83	3. 19	3. 16	3. 59	3. 56	4. 11	4. 07	4. 80	4. 75	5. 76	5. 70				
100	2. 61	2. 57	2. 88	2. 84	3. 20	3. 16	3. 61	3. 55	4. 12	4. 06	4. 81	4. 73	5. 76	5. 67		
102	2. 40	2. 35	2. 63	2. 57	2. 90	2. 83	3. 22	3. 15	3. 62	3. 54	4. 13	4. 04	4. 81	4. 70	5. 76	5. 63
104	2. 23	2. 16	2. 42	2. 35	2. 64	2. 56	2. 91	2. 82	3. 23	3. 13	3. 63	3. 52	4. 13	4. 01	4. 81	4. 66
106	2. 08	2. 00	2. 25	2. 16	2. 43	2. 34	2. 65	2. 55	2. 92	2. 80	3. 23	3. 11	3. 63	3. 49	4. 13	3. 97
108	1. 96	1. 86	2. 10	2. 00	2. 26	2. 15	2. 45	2. 33	2. 66	2. 53	2. 92	2. 78	3. 24	3. 08	3. 63	3. 45
110	1. 85	1. 73	1. 97	1. 85	2. 11	1. 98	2. 27	2. 13	2. 45	2. 31	2. 67	2. 51	2. 92	2. 75	3. 23	3. 04
112	1. 75	1. 62	1. 86	1. 72	1. 98	1. 83	2. 12	1. 96	2. 28	2. 11	2. 46	2. 28	2. 67	2. 48	2. 92	2. 71
114	1. 66	1. 52	1. 76	1. 61	1. 87	1. 71	1. 99	1. 82	2. 12	1. 94	2. 28	2. 08	2. 46	2. 25	2. 67	2. 44
116	1. 59	1. 43	1. 68	1. 51	1. 77	1. 59	1. 88	1. 69	2. 00	1. 79	2. 13	1. 91	2. 28	2. 05	2. 46	2. 21
118	1. 52	1. 34	1. 60	1. 41	1. 68	1. 49	1. 78	1. 57	1. 88	1. 66	2. 00	1. 76	2. 13	1. 88	2. 28	2. 01
120	1. 46	1. 27	1. 53	1. 33	1. 61	1. 39	1. 69	1. 47	1. 78	1. 54	1. 89	1. 63	2. 00	1. 73	2. 13	1. 84
122	1. 41	1. 19	1. 47	1. 25	1. 54	1. 31	1. 62	1. 37	1. 70	1. 44	1. 79	1. 52	1. 89	1. 60	2. 00	1. 70
124	1. 36	1. 13	1. 42	1. 18	1. 48	1. 23	1. 55	1. 28	1. 62	1. 34	1. 70	1. 41	1. 79	1. 48	1. 89	1. 56
126	1. 32	1. 06	1. 37	1. 11	1. 43	1. 15	1. 48	1. 20	1. 55	1. 26	1. 62	1. 31	1. 70	1. 38	1. 79	1. 45
128	1. 28	1. 01	1. 33	1. 04	1. 38	1. 08	1. 43	1. 13	1. 49	1. 17	1. 55	1. 23	1. 62	1. 28	1. 70	1. 34
130	1. 24	0. 95	1. 29	0. 98	1. 33	1. 02	1. 38	1. 06	1. 44	1. 10	1. 49	1. 14	1. 56	1. 19	1. 62	1. 24
132	1. 21	0. 90	1. 25	0. 93	1. 29	0. 96	1. 34	0. 99	1. 39	1. 03	1. 44	1. 07	1. 49	1. 11	1. 55	1. 16
134	1. 18	0. 85	1. 22	0. 88	1. 26	0. 90	1. 30	0. 93	1. 34	0. 97	1. 39	1. 00	1. 44	1. 04	1. 49	1. 07
136	1. 15	0. 80	1. 19	0. 83	1. 22	0. 85	1. 26	0. 88	1. 30	0. 90	1. 34	0. 93	1. 39	0. 97	1. 44	1. 00
138	1. 13	0. 76	1. 16	0. 78	1. 19	0. 80	1. 23	0. 82	1. 27	0. 85	1. 30	0. 87	1. 35	0. 90	1. 39	0. 93
140	1. 11	0. 71	1. 14	0. 73	1. 17	0. 75	1. 20	0. 77	1. 23	0. 79	1. 27	0. 82	1. 31	0. 84	1. 34	0. 86
142	1. 09	0. 67	1. 12	0. 69	1. 14	0. 70	1. 17	0. 72	1. 20	0. 74	1. 24	0. 76	1. 27	0. 78	1. 30	0. 80
144	1. 07	0. 63	1. 10	0. 64	1. 12	0. 66	1. 15	0. 67	1. 18	0. 69	1. 21	0. 71	1. 24	0. 73	1. 27	0. 75
146	1. 05	0. 59	1. 08	0. 60	1. 10	0. 62	1. 13	0. 63	1. 15	0. 64	1. 18	0. 66	1. 21	0. 67	1. 24	0. 69
148	1. 04	0. 55	1. 06	0. 56	1. 08	0. 57	1. 11	0. 59	1. 13	0. 60	1. 15	0. 61	1. 18	0. 62	1. 21	0. 64
150	1. 03	0. 51	1. 05	0. 52	1. 07	0. 53	1. 09	0. 54	1. 11	0. 55	1. 13	0. 57	1. 15	0. 58	1. 18	0. 59
152	1. 02	0. 48	1. 04	0. 49	1. 05	0. 49	1. 07	0. 50	1. 09	0. 51	1. 11	0. 52	1. 13	0. 53	1. 15	0. 54
154	1. 01	0. 44	1. 02	0. 45	1. 04	0. 46	1. 06	0. 46	1. 08	0. 47	1. 09	0. 48	1. 11	0. 49	1. 13	0. 50
156	1. 00	0. 41	1. 01	0. 41	1. 03	0. 42	1. 05	0. 43	1. 06	0. 43	1. 08	0. 44	1. 09	0. 45	1. 11	0. 45
158	0. 99	0. 37	1. 01	0. 38	1. 02	0. 38	1. 03	0. 39	1. 05	0. 39	1. 06	0. 40	1. 08	0. 40	1. 09	0. 41
160	0. 99	0. 34	1. 00	0. 34	1. 01	0. 35	1. 02	0. 35	1. 04	0. 35	1. 05	0. 36	1. 06	0. 36	1. 08	0. 37
	94°		96°		98°		100°		102°		104°		106°		108°	
°																
104	5. 74	5. 57														
106	4. 80	4. 61	5. 73	5. 51												
108	4. 12	3. 92	4. 78	4. 55	5. 70	5. 42										
110	3. 62	3. 40	4. 11	3. 86	4. 76	4. 48	5. 67	5. 33								
112	3. 23	2. 99	3. 61	3. 35	4. 09	3. 80	4. 74	4. 40	5. 63	5. 22						
114	2. 92	2. 66	3. 22	2. 94	3. 59	3. 28	4. 07	3. 72	4. 70	4. 30	5. 59	5. 10				
116	2. 66	2. 39	2. 91	2. 61	3. 20	2. 88	3. 57	3. 21	4. 04	3. 63	4. 67	4. 19	5. 54	4. 98		
118	2. 45	2. 17	2. 65	2. 34	2. 90	2. 56	3. 19	2. 81	3. 55	3. 13	4. 01	3. 54	4. 62	4. 08	5. 48	4. 84
120	2. 28	1. 97	2. 45	2. 12	2. 64	2. 29	2. 88	2. 49	3. 17	2. 74	3. 52	3. 05	3. 97	3. 44	4. 57	3. 96
122	2. 12	1. 80	2. 27	1. 92	2. 43	2. 06	2. 63	2. 23	2. 86	2. 43	3. 14	2. 66	3. 49	2. 96	3. 93	3. 33
124	2. 00	1. 65	2. 12	1. 76	2. 26	1. 87	2. 42	2. 01	2. 61	2. 16	2. 84	2. 35	3. 11	2. 58	3. 45	2. 86
126	1. 88	1. 52	1. 99	1. 61	2. 11	1. 71	2. 25	1. 82	2. 40	1. 95	2. 59	2. 10	2. 81	2. 27	3. 08	2. 49
128	1. 78	1. 41	1. 88	1. 48	1. 98	1. 56	2. 10	1. 65	2. 23	1. 76	2. 39	1. 88	2. 57	2. 02	2. 78	2. 19
130	1. 70	1. 30	1. 78	1. 36	1. 87	1. 43	1. 97	1. 51	2. 08	1. 60	2. 21	1. 70	2. 36	1. 81	2. 54	1. 94
132	1. 62	1. 20	1. 69	1. 26	1. 77	1. 32	1. 86	1. 38	1. 96	1. 45	2. 07	1. 54	2. 19	1. 63	2. 34	1. 74
134	1. 55	1. 12	1. 62	1. 16	1. 68	1. 21	1. 76	1. 27	1. 85	1. 33	1. 94	1. 40	2. 05	1. 47	2. 17	1. 56
136	1. 49	1. 04	1. 55	1. 07	1. 61	1. 12	1. 68	1. 16	1. 75	1. 22	1. 83	1. 27	1. 92	1. 34	2. 03	1. 41
138	1. 44	0. 96	1. 49	0. 99	1. 54	1. 03	1. 60	1. 07	1. 66	1. 11	1. 74	1. 16	1. 81	1. 21	1. 90	1. 27
140	1. 39	0. 89	1. 43	0. 92	1. 48	0. 95	1. 53	0. 98	1. 59	1. 02	1. 65	1. 06	1. 72	1. 10	1. 79	1. 15
142	1. 34	0. 83	1. 38	0. 85	1. 43	0. 88	1. 47	0. 91	1. 52	0. 94	1. 58	0. 97	1. 64	1. 01	1. 70	1. 05
144	1. 30	0. 77	1. 34	0. 79	1. 38	0. 81	1. 42	0. 83	1. 46	0. 86	1. 51	0. 89	1. 56	0. 92	1. 62	0. 95
146	1. 27	0. 71	1. 30	0. 73	1. 33	0. 75	1. 37	0. 77	1. 41	0. 79	1. 45	0. 81	1. 50	0. 84	1. 54	0. 86
148	1. 23	0. 65	1. 26	0. 67	1. 29	0. 69	1. 33	0. 70	1. 36	0. 72	1. 40	0. 74	1. 44	0. 76	1. 48	0. 78
150	1. 20	0. 60	1. 23	0. 61	1. 26	0. 63	1. 29	0. 64	1. 32	0. 66	1. 35	0. 67	1. 38	0. 69	1. 42	0. 71
152	1. 18	0. 55	1. 20	0. 56	1. 22	0. 57	1. 25	0. 59	1. 28	0. 60	1. 31	0. 61	1. 34	0. 63	1. 37	0. 64
154	1. 15	0. 50	1. 17	0. 51	1. 19	0. 52	1. 22	0. 53	1. 24	0. 54	1. 27	0. 56	1. 29	0. 57	1. 32	0. 58
156	1. 13	0. 46	1. 15	0. 47	1. 17	0. 47	1. 19	0. 48	1. 21	0. 49	1. 23	0. 50	1. 25	0. 51	1. 28	0. 52
158	1. 11	0. 42	1. 13	0. 42	1. 14	0. 43	1. 16	0. 44	1. 18	0. 44	1. 20	0. 45	1. 22	0. 46	1. 24	0. 47
160	1. 09	0. 37	1. 11	0. 38	1. 12	0. 38	1. 14	0. 39	1. 15	0. 39	1. 17	0. 40	1. 19	0. 41	1. 21	0. 41

TABLE 18
Distance of an Object by Two Bearings

Difference between the course and second bearing	Difference between the course and first bearing															
	110°		112°		114°		116°		118°		120°		122°			
°																
120	5. 41	4. 69														
122	4. 52	3. 83	5. 34	4. 53												
124	3. 88	3. 22	4. 46	3. 70	5. 26	4. 36										
126	3. 41	2. 76	3. 83	3. 10	4. 39	3. 55	5. 18	4. 19								
128	3. 04	2. 40	3. 36	2. 65	3. 78	2. 98	4. 32	3. 41	5. 08	4. 01						
130	2. 75	2. 10	3. 00	2. 30	3. 31	2. 54	3. 72	2. 85	4. 25	3. 25	4. 99	3. 82				
132	2. 51	1. 86	2. 71	2. 01	2. 96	2. 20	3. 26	2. 42	3. 65	2. 71	4. 17	3. 10	4. 88	3. 63		
134	2. 31	1. 66	2. 48	1. 78	2. 67	1. 92	2. 91	2. 09	3. 20	2. 30	3. 58	2. 57	4. 08	2. 93		
136	2. 14	1. 49	2. 28	1. 58	2. 44	1. 69	2. 63	1. 83	2. 86	1. 98	3. 14	2. 18	3. 51	2. 44		
138	2. 00	1. 34	2. 12	1. 42	2. 25	1. 50	2. 40	1. 61	2. 58	1. 73	2. 80	1. 88	3. 08	2. 06		
140	1. 88	1. 21	1. 97	1. 27	2. 08	1. 34	2. 21	1. 42	2. 36	1. 52	2. 53	1. 63	2. 74	1. 76		
142	1. 77	1. 09	1. 85	1. 14	1. 95	1. 20	2. 05	1. 26	2. 17	1. 34	2. 31	1. 42	2. 48	1. 53		
144	1. 68	0. 99	1. 75	1. 03	1. 83	1. 07	1. 91	1. 13	2. 01	1. 18	2. 13	1. 25	2. 26	1. 33		
146	1. 60	0. 89	1. 66	0. 93	1. 72	0. 96	1. 80	1. 01	1. 88	1. 05	1. 98	1. 10	2. 08	1. 17		
148	1. 53	0. 81	1. 58	0. 84	1. 63	0. 87	1. 70	0. 90	1. 77	0. 94	1. 84	0. 98	1. 93	1. 03		
150	1. 46	0. 73	1. 51	0. 75	1. 55	0. 78	1. 61	0. 80	1. 67	0. 83	1. 73	0. 87	1. 81	0. 90		
152	1. 40	0. 66	1. 44	0. 68	1. 48	0. 70	1. 53	0. 72	1. 58	0. 74	1. 63	0. 77	1. 70	0. 80		
154	1. 35	0. 59	1. 39	0. 61	1. 42	0. 62	1. 46	0. 64	1. 50	0. 66	1. 55	0. 68	1. 60	0. 70		
156	1. 31	0. 53	1. 33	0. 54	1. 37	0. 56	1. 40	0. 57	1. 43	0. 58	1. 47	0. 60	1. 52	0. 62		
158	1. 26	0. 47	1. 29	0. 48	1. 32	0. 49	1. 34	0. 50	1. 37	0. 51	1. 41	0. 53	1. 44	0. 54		
160	1. 23	0. 42	1. 25	0. 43	1. 27	0. 43	1. 29	0. 44	1. 32	0. 45	1. 35	0. 46	1. 38	0. 47		
	124°		126°		128°		130°		132°		134°		136°			
134	4. 77	3. 43														
136	3. 99	2. 77	4. 66	3. 24												
138	3. 43	2. 29	3. 89	2. 60	4. 54	3. 04										
140	3. 01	1. 93	3. 34	2. 15	3. 79	2. 44	4. 41	2. 84								
142	2. 68	1. 65	2. 94	1. 81	3. 26	2. 01	3. 68	2. 27	4. 28	2. 63						
144	2. 42	1. 42	2. 62	1. 54	2. 86	1. 68	3. 17	1. 86	3. 57	2. 10	4. 14	2. 43				
146	2. 21	1. 24	2. 37	1. 32	2. 55	1. 43	2. 78	1. 55	3. 07	1. 72	3. 46	1. 93	4. 00	2. 24		
148	2. 04	1. 08	2. 16	1. 14	2. 30	1. 22	2. 48	1. 31	2. 70	1. 43	2. 97	1. 58	3. 34	1. 77		
150	1. 89	0. 95	1. 99	0. 99	2. 10	1. 05	2. 24	1. 12	2. 40	1. 20	2. 61	1. 30	2. 87	1. 44		
152	1. 77	0. 83	1. 85	0. 87	1. 94	0. 91	2. 04	0. 96	2. 17	1. 02	2. 33	1. 09	2. 52	1. 18		
154	1. 66	0. 73	1. 72	0. 76	1. 80	0. 79	1. 88	0. 83	1. 98	0. 87	2. 10	0. 92	2. 25	0. 99		
156	1. 56	0. 64	1. 62	0. 66	1. 68	0. 68	1. 75	0. 71	1. 83	0. 74	1. 92	0. 78	2. 03	0. 83		
158	1. 48	0. 56	1. 53	0. 57	1. 58	0. 59	1. 63	0. 61	1. 70	0. 64	1. 77	0. 66	1. 85	0. 69		
160	1. 41	0. 48	1. 45	0. 49	1. 49	0. 51	1. 53	0. 52	1. 58	0. 54	1. 64	0. 56	1. 71	0. 58		
	138°		140°		142°		144°		146°		148°		150°			
148	3. 85	2. 04														
150	3. 22	1. 61	3. 70	1. 85												
152	2. 77	1. 30	3. 09	1. 45	3. 55	1. 66										
154	2. 43	1. 06	2. 66	1. 16	2. 96	1. 30	3. 38	1. 48								
156	2. 17	0. 88	2. 33	0. 95	2. 54	1. 04	2. 83	1. 15	3. 22	1. 31						
158	1. 96	0. 73	2. 08	0. 78	2. 23	0. 84	2. 43	0. 91	2. 69	1. 01	3. 05	1. 14				
160	1. 79	0. 61	1. 88	0. 64	1. 99	0. 68	2. 13	0. 73	2. 31	0. 79	2. 55	0. 87	2. 88	0. 98		