

Solutions sheet No. 118				Cosine Rule - Find an Side 1 (degrees & minutes)				
Working using $a^2 = b^2 + c^2 - 2bccosA^\circ$								
No.	a	b	c	A	Equation	Calculator	Square root	Solution
1	a	18	32	103°22'	$a^2 = 18^2 + 32^2 - 2 \times 18 \times 32 \times \cos 103^\circ 22'$	$a^2 = 1614.322\dots$	$a = 40.179\dots$	$a = 40.2$
2	b	20	27	69°16'	$b^2 = 20^2 + 27^2 - 2 \times 20 \times 27 \times \cos 69^\circ 16'$	$b^2 = 746.659\dots$	$b = 27.325\dots$	$b = 27.3$
3	c	29	30	49°30'	$c^2 = 29^2 + 30^2 - 2 \times 29 \times 30 \times \cos 49^\circ 30'$	$c^2 = 610.96\dots$	$c = 24.718\dots$	$c = 24.7$
4	d	16	18	36°23'	$d^2 = 16^2 + 18^2 - 2 \times 16 \times 18 \times \cos 36^\circ 23'$	$d^2 = 116.282\dots$	$d = 10.783\dots$	$d = 10.8$
5	e	11	12	87°38'	$e^2 = 11^2 + 12^2 - 2 \times 11 \times 12 \times \cos 87^\circ 38'$	$e^2 = 254.098\dots$	$e = 15.94\dots$	$e = 15.9$
6	f	15	16	32°47'	$f^2 = 15^2 + 16^2 - 2 \times 15 \times 16 \times \cos 32^\circ 47'$	$f^2 = 77.452\dots$	$f = 8.801\dots$	$f = 8.8$
7	g	125	135	43°28'	$g^2 = 125^2 + 135^2 - 2 \times 125 \times 135 \times \cos 43^\circ 28'$	$g^2 = 9355.103\dots$	$g = 96.722\dots$	$g = 96.7$
8	h	36	53	63°41'	$h^2 = 36^2 + 53^2 - 2 \times 36 \times 53 \times \cos 63^\circ 41'$	$h^2 = 2413.245\dots$	$h = 49.125\dots$	$h = 49.1$
9	i	75	82	33°14'	$i^2 = 75^2 + 82^2 - 2 \times 75 \times 82 \times \cos 33^\circ 14'$	$i^2 = 2060.719\dots$	$i = 45.395\dots$	$i = 45.4$
10	j	45	71	72°19'	$j^2 = 45^2 + 71^2 - 2 \times 45 \times 71 \times \cos 72^\circ 19'$	$j^2 = 5125\dots$	$j = 71.589\dots$	$j = 71.6$
11	k	22	27	79°42'	$k^2 = 22^2 + 27^2 - 2 \times 22 \times 27 \times \cos 79^\circ 42'$	$k^2 = 1000.583\dots$	$k = 31.632\dots$	$k = 31.6$
12	l	2.2	3.2	46°5'	$l^2 = 2.2^2 + 3.2^2 - 2 \times 2.2 \times 3.2 \times \cos 46^\circ 5'$	$l^2 = 5.314\dots$	$l = 2.305\dots$	$l = 2.3$
13	m	6.6	8.4	48°31'	$m^2 = 6.6^2 + 8.4^2 - 2 \times 6.6 \times 8.4 \times \cos 48^\circ 31'$	$m^2 = 40.673\dots$	$m = 6.378\dots$	$m = 6.4$
14	n	37	43	83°22'	$n^2 = 37^2 + 43^2 - 2 \times 37 \times 43 \times \cos 83^\circ 22'$	$n^2 = 2850.431\dots$	$n = 53.389\dots$	$n = 53.4$
15	p	7.5	8	106°53'	$p^2 = 7.5^2 + 8^2 - 2 \times 7.5 \times 8 \times \cos 106^\circ 53'$	$p^2 = 155.101\dots$	$p = 12.454\dots$	$p = 12.5$
16	q	61	62	35°42'	$q^2 = 61^2 + 62^2 - 2 \times 61 \times 62 \times \cos 35^\circ 42'$	$q^2 = 1422.4\dots$	$q = 37.715\dots$	$q = 37.7$
17	r	14.8	16.4	79°54'	$r^2 = 14.8^2 + 16.4^2 - 2 \times 14.8 \times 16.4 \times \cos 79^\circ 54'$	$r^2 = 402.87\dots$	$r = 20.072\dots$	$r = 20.1$
18	s	185	200	28°57'	$s^2 = 185^2 + 200^2 - 2 \times 185 \times 200 \times \cos 28^\circ 57'$	$s^2 = 9471.859\dots$	$s = 97.323\dots$	$s = 97.3$
19	t	8.6	11.2	40°25'	$t^2 = 8.6^2 + 11.2^2 - 2 \times 8.6 \times 11.2 \times \cos 40^\circ 25'$	$t^2 = 52.734\dots$	$t = 7.262\dots$	$t = 7.3$
20	u	4.9	5.1	43°46'	$u^2 = 4.9^2 + 5.1^2 - 2 \times 4.9 \times 5.1 \times \cos 43^\circ 46'$	$u^2 = 13.926\dots$	$u = 3.732\dots$	$u = 3.7$