

Solutions sheet No. 127			Mixed Trig Rule - Find an Side 3 (degrees & minutes)							
Working using $a\sin A = b\sin B$ or $a^2 = b^2 + c^2 - 2bccosA^\circ$										
No.	a	b	c	A	B	Equation	Calculator	$a^2$	a	Solution
1	a	17	20	77°38'		$a^2 = 20^2 + 77^2 - 2 \times 20 \times 77 \times \cos 77^\circ 38'$	536.03328	$a^2 = 536.033\dots$	$a = 23.152\dots$	$a = 23.2$
2	b	21	35	102°47'		$b^2 = 35^2 + 102^2 - 2 \times 35 \times 102 \times \cos 102^\circ 47'$	1971.6302	$b^2 = 1971.63\dots$	$b = 44.403\dots$	$b = 44.4$
3	c	53	55	46°33'		$c^2 = 55^2 + 46^2 - 2 \times 55 \times 46 \times \cos 46^\circ 33'$	1784.1417	$c^2 = 1784.142\dots$	$c = 42.239\dots$	$c = 42.2$
4	d	44		75°31'	71°16'	$d = 44\sin 75^\circ 31' / \sin 71^\circ 16'$	44.984834		$d = 44.985\dots$	$d = 45.0$
5	e	24		67°38'	31°43'	$e = 24\sin 67^\circ 38' / \sin 31^\circ 43'$	42.217262		$e = 42.217\dots$	$e = 42.2$
6	f	8		43°53'	53°54'	$f = 8\sin 43^\circ 53' / \sin 53^\circ 54'$	6.863375		$f = 6.863\dots$	$f = 6.9$
7	g	14	15	46°21'		$g^2 = 15^2 + 46^2 - 2 \times 15 \times 46 \times \cos 46^\circ 21'$	129.24348	$g^2 = 129.243\dots$	$g = 11.369\dots$	$g = 11.4$
8	h	42	55	66°25'		$h^2 = 55^2 + 42^2 - 2 \times 55 \times 42 \times \cos 66^\circ 25'$	2909.8767	$h^2 = 2909.877\dots$	$h = 53.943\dots$	$h = 53.9$
9	i	15		28°44'	82°8'	$i = 15\sin 28^\circ 44' / \sin 82^\circ 8'$	7.2795114		$i = 7.28\dots$	$i = 7.3$
10	j	125		41°37'	76°39'	$j = 125\sin 41^\circ 37' / \sin 76^\circ 39'$	85.3236		$j = 85.324\dots$	$j = 85.3$
11	k	25		48°11'	76°27'	$k = 25\sin 48^\circ 11' / \sin 76^\circ 27'$	19.165508		$k = 19.166\dots$	$k = 19.2$
12	l	60		29°26'	77°12'	$l = 60\sin 29^\circ 26' / \sin 77^\circ 12'$	30.236016		$l = 30.236\dots$	$l = 30.2$
13	m	12.6	15.3	47°58'		$m^2 = 15.3^2 + 47^2 - 2 \times 15.3 \times 47 \times \cos 47^\circ 58'$	129.89871	$m^2 = 129.899\dots$	$m = 11.397\dots$	$m = 11.4$
14	n	63	72	82°52'		$n^2 = 72^2 + 63^2 - 2 \times 72 \times 63 \times \cos 82^\circ 52'$	7890.4216	$n^2 = 7890.422\dots$	$n = 88.828\dots$	$n = 88.8$
15	p	35		32°12'	82°34'	$p = 35\sin 32^\circ 12' / \sin 82^\circ 34'$	18.808737		$p = 18.809\dots$	$p = 18.8$
16	q	23	24	31°17'		$q^2 = 24^2 + 23^2 - 2 \times 24 \times 23 \times \cos 31^\circ 17'$	158.6873	$q^2 = 158.687\dots$	$q = 12.597\dots$	$q = 12.6$
17	r	48	60	71°6'		$r^2 = 60^2 + 48^2 - 2 \times 60 \times 48 \times \cos 71^\circ 6'$	4028.7274	$r^2 = 4028.727\dots$	$r = 63.472\dots$	$r = 63.5$
18	s	165		68°26'	73°46'	$s = 165\sin 68^\circ 26' / \sin 73^\circ 46'$	159.82027		$s = 159.82\dots$	$s = 159.8$
19	t	8.2	10.8	42°54'		$t^2 = 10.8^2 + 8.2^2 - 2 \times 10.8 \times 8.2 \times \cos 42^\circ 54'$	52.254189	$t^2 = 52.254\dots$	$t = 7.229\dots$	$t = 7.2$
20	u	38		83°29'	44°17'	$u = 38\sin 83^\circ 29' / \sin 44^\circ 17'$	54.073468		$u = 54.073\dots$	$u = 54.1$