

CLIMATE AND SOLAR DATA* MELBOURNE (Latitude 38° S)

*source BOM, CSIRO Solar Tables/ SunPATH

	Jan	Feb	Mar	Apr	May	Jun	July	Aug	Sept	Oct	Nov	Dec
Average Max (°C)	25.9	25.8	23.9	20.3	16.7	14.0	13.4	14.9	17.2	19.6	21.9	24.2
Average Min (°C)	14.3	14.6	13.2	10.7	8.6	6.9	6.0	6.7	7.9	9.5	11.1	12.9
Av. Rainfall (mm)	47.6	47.3	50.2	57.3	56.2	49.2	47.7	50.2	57.9	66.2	59.5	59.2
Av. daily sunshine (hours)	9.0	8.1	6.8	5.6	3.9	3.6	3.7	4.7	5.7	6.3	7.0	7.5
Mean clear days*	6.2	6.4	6.1	4.7	3.0	2.6	2.6	2.9	3.2	3.7	3.6	4.3
Mean cloudy days*	11.3	9.7	13.3	14.8	18.1	16.8	17.2	16.7	15.7	16.2	15.2	14.2

*clear day (2/8 th's cloud or less) cloudy day (6/8 th's cloud or more)

JUNE 22 WINTER SOLSTICE

TIME	ALTITUDE°	AZIMUTH°	shadow length of 1.0 m object
6am			
7am			
8am	3	57	19.08
9am	12	46	4.70
10am	20	34	2.75
11am	26	21	2.05
Noon	28	6	1.88
1pm	28	350	1.88
2pm	24	335	2.25
3pm	18	322	3.08
4pm	10	311	5.67
5pm			
6pm			
7pm			

SEPTEMBER 23 EQUINOX

TIME	ALTITUDE°	AZIMUTH°	shadow length of 1.0 m object
6am			
7am	9	83	6.31
8am	21	73	2.61
9am	32	61	1.60
10am	41	47	1.15
11am	49	28	0.87
Noon	52	5	0.78
1pm	50	341	0.84
2pm	45	320	1.00
3pm	36	304	1.38
4pm	25	292	2.14
5pm	14	281	4.01
6pm	2	272	28.64
7pm			

DECEMBER 22* SUMMER SOLSTICE

TIME	ALTITUDE°	AZIMUTH°	shadow length of 1.0 m object
7am	11	111	5.14
8am	22	103	2.48
9am	34	95	1.48
10am	46	86	0.97
11am	57	74	0.65
Noon	68	55	0.40
1pm	75	16	0.27
2pm	73	326	0.31
3pm	64	297	0.49
4pm	53	281	0.75
5pm	41	270	1.15
6pm	29	262	1.80
7pm	18	254	3.08
8pm	7	245	8.14

* Daylight Saving Time - add 1 hour for Standard Time

CONVERSION & USEFUL DATA

The following are a range of useful conversion data and formulae. For imperial to metric conversion **multiply** by the factor indicated. For metric to imperial, **divide** by the factor.

Length

To convert	Multiply by
inches to millimetres	25.4
inches to metres	0.0254
feet to metres	0.3048
yards to metres	0.9144
links to metres	0.201168
chains to metres	20.1168
furlong to metres	201.168
miles to kilometres	1.609344
nautical miles to kilometres	1.852

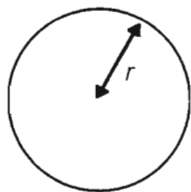
Area

To convert	Multiply by
sq inches to sq millimetres	645.16
sq feet to sq metres	0.092903
sq yards to sq metres	0.836127
acres to sq metres	4046.8564
acres to hectares	0.4046856
perch to hectares	0.0025928
rood to hectares	0.1011714
sq miles to sq kilometres	2.589988

Volume & Capacity

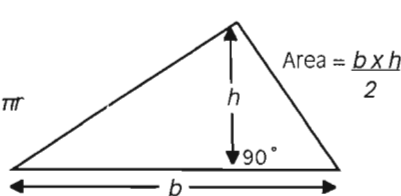
To convert	Multiply by
cubic inches to cubic cm	16.387064
cubic inches to litres	0.016387
cubic feet to cubic metres	0.0283168
cubic feet to litres	28.316847
UK pints to litres	0.5682613
cubic yards to cubic metres	0.7645549
UK gallons to litres	4.54609
UK gallons to cubic metres	0.0045461

Measurement of a Circle

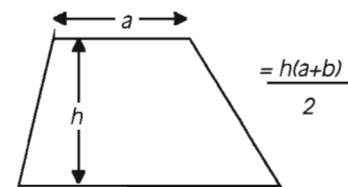


Circumference $C = 2\pi r$
where r = radius
Area of a circle = $\pi \times r \times r = \pi r^2$
where $\pi = 3.1428$ (22)
7

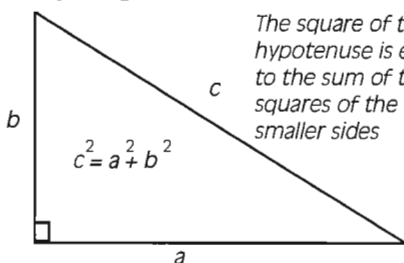
Area of a Triangle



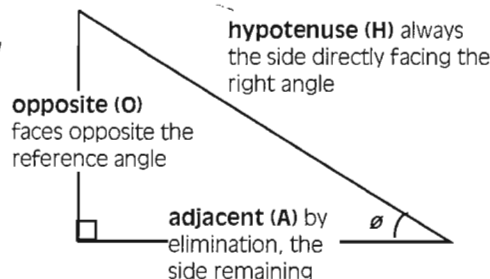
Area of a Trapezium



Pythagoras' Theorem



Trigonometry



Trigonometry allows the measuring of angles and lengths for right angle triangles. The first step in any trig problem is to determine the hypotenuse, the opposite side and the adjacent side:

To calculate the unknown measurement of a side or angle in a right angles triangle it is necessary to apply one of the following formulae (a calculator with trigonometric functions is required): $\sin \theta = O/H$, $\cos \theta = A/H$
 $\tan \theta = O/A$ (SOHCAHTOA)