

Table 10-T-11 : Alphabetical Listings of Common Conversions

To convert from	To	Multiply by
Acres	Square feet	43,560
Acres	Square meters	4074
Acres	Square miles	0.001563
Acre-feet	Cubic meters	1233
Ampere-hours (absolute)	Coulomb (absolute)	3600
Angstrom units	Inches	3.937×10^{-9}
Angstrom units	Meters	1×10^{-10}
Angstrom units	Microns	1.10^{-4}
Atmospheres	Millimeters of mercury at 32 f	760
Atmospheres	Dynes per square centimetre	1.0133×10^6
Atmospheres	Newtons per square meter	101,325
Atmospheres	Feet of water at 39.1 F	33.90
Atmospheres	Grams per square centimetre	1033.3
Atmospheres	Inches of mercury at 32 F	29.921
Atmospheres	Pounds per square foot	2116.3
Atmospheres	Pounds per square inch	14.696
Bags (cement)	Pounds (cement)	94
Barrels (cement)	Pounds (cement)	376
Barrels (oil)	Cubic meters	0.15899
Barrels (oil)	Gallons	42
Barrels(U.S. liquid)	Cubic meters	0.11924
Barrels(U.S. liquid)	Gallons	31.5
Barrels per day	Gallons per minute	0.02917
Bars	Atmospheres	0.9869
Bars	Newton's per square meter	1×10^5
Bars	Pounds per square inch	14.504
Board feet	Cubic feet	1/12
Boiler horsepower	BTU per hour	33,480
Boiler horsepower	Kilowatts	9.803
BTU.	Calories (gram)	252
BTU.	Centigrade heat units (c.h.u or p.c.u)	0.55556
BTU.	Foot-Pounds	777.9
BTU.	Horsepower-hours	3.929×10^{-4}
BTU.	Joules	1055.1
BTU.	Liter-atmospheres	10.41
BTU.	Pounds carbon toCO ₂	6.88×10^{-5}
BTU.	Pounds water evaporated from and at 212 F	0.001036
BTU	Cubic foot-atmospheres	0.3676
BTU	Kilowatt-hours	2.930×10^{-4}
BTU per cubic foot	Joules per cubic meter	37,260
BTU per hour	Watts	0.29307
BTU per minute	Horsepower	0.02357
BTU per pound	Joules per kilogram	2326
BTU per pound per degree	Calories per gram per degree	
Fahrenheit	Centigrade	1
BTU per second	Joules per gram per degree	4186.8
BTU per square foot per hour	Kelvin	
BTU per square foot per min	Watts	
BTU per square foot per sec	Joules per square meter per second	1054.4
For temperature gradient of 1 F. Per inch	Kilowatts per square foot	3.1546
1 F. Per inch	Calories, gram (15°C),per square	0.1758
BTU (60 F) per degree Fahrenheit	centimetre per second for temperature	1.2405
Bushels (U.S. dry)	Gradient of 1 °C per centimetre	
Bushels (U.S dry)	Calories per degree centigrade	453.61.2444
Calories, gram	Cubic feet	0.03524
Calories, gram	Cubic meters	3.968×10^{-3}
Calories, gram	BTU	3.087
Calories, gram	Foot-pounds	4.1868
Calories, gram	Joules	4.130×10^{-2}
Calories, gram, per gram per degree °C	Liter-atmosphere	1.5591×10^6
Calories, kilogram	Horsepower-hours	4168.8
Calories, kilogram per	Joules per kilogram per degree	0.0011626

second	Kelvin	
Candle power (spherical)	Kilowatt hours	4.185
	Kilowatts	12.556
Carats (metric)	Grams	0.2
Centigrade heat units	BTU	1.8
Centimetres	Angstrom units	1.0×10^8
Centimetres	Feet	0.03281
Centimetres	Inches	0.03937
Centimetres	Meters	0.01
Centimetres	Microns	10,000
Centimetres of mercury at 0° C	Atmosphere	0.013158
Centimetres of mercury at 0° C	Feet of water at 39.1 °F	0.4460
Centimetres of mercury at 0° C	Newton's per square meter	1333.2
Centimetres of mercury at 0° C	Pounds per square foot	27,845
Centimetres of mercury at 0° C	Pounds per square inch	0.19337
Centimetres per second	Feet per minute	1.9685
Centimetres of water at 4° C	Newton's per square meter	98.064
Centistokes	Square meters per second	1.0×10^{-6}
Circular mills	Square centimetres	5.067×10^{-6}
Circular mills	Square inches	7.854×10^{-7}
Circular mills	Square mils	0.7854
Cords	Cubic feet	128
Cubic centimetres	Cubic feet	3.532×10^{-5}
Cubic centimetres	Gallons	2.6417×10^{-4}
Cubic centimetres	Ounces (U.S.fluid)	0.03381
Cubic centimetres	Quarts (U.S.fluid)	0.0010567
Cubic feet	Bushels (U.S)	0.8.36
Cubic feet	Cubic centimetres	28,317
Cubic feet	Cubic ,meters	0.028317
Cubic feet	Cubic yards	0.03704
Cubic feet	Gallons	7.481
Cubic feet	Liters	28.316
Cubic foot atmospheres	Foot-pounds	2116.3
Cubic foot atmospheres	Liter-atmospheres	28.316
Cubic feet of water (60 F)	Pounds	62.37
Cubic feet per minute	Cubic centimetres per second	472.0
Cubic feet per minute	Gallons per second	0.1247
Cubic feet per second	Gallons per minute	448.8
Cubic feet per second	Million gallons per day	0.64632
Cubic inches	Cubic meters	1.6387×10^{-5}
Cubic yards	Cubic meters	0.76456
Curies	Disintegrations per minute	2.2×10^{12}
Curies	Coulombs per minute	1.1×10^{12}
Degrees	Radians	0.017453
Drams (apothecaries or troy)	Grams	3.888
Drams(avoirdupois)	Grams	1.7719
Dynes	Newton's	1×10^{-5}
Ergs	Joules	1×10^{-7}
Faradays	Coulombs (abs.)	96,500
Fathoms	Feet	6
Feet	Meters	0.3048
Feet per minute	Meters	0.5080
Feet per minute	Centimetre per second	0.011364
Feet per (second) ²	Meters per (second) ²	0.3048
Feet of water at 39.2 F	Newton's per square meter	2989
Foot-poundals	BTU.	3.995×10^{-5}
Foot-poundals	Joules	0.04214
Foot-poundals	Liter-atmospheres	4.159×10^{-4}
Foot-pounds	BTU.	0.0012856
Foot-pounds	Calories, gram	0.3239
Foot-pounds	Foot-poundals	32.174
Foot-pounds	Horsepower-hours	5.051×10^{-7}
Foot-pounds	Kilowatt-hours	3.766×10^{-7}
Foot-pounds	Liter-atmospheres	0.013381
Foot-pounds force	Joules	1.3558

Foot-pounds per second	Horsepower	0.0018182
Foot-pounds per second	Kilowatts	0.0013558
Furlongs	Miles	0.125
Gallons (U.S. liquid)	Barrels (U.S. liquid)	0.03175
Gallons	Cubic meters	0.003785
Gallons	Cubic feet	0.13368
Gallons	Liters	3.785
Gallons	Ounces (U.S. fluid)	128
Gallons per minute	Cubic feet per hour	8.021
Gallons per minute	Cubic feet per second	0.002228
Grains	Grams	0.06480
Grains	Pounds	1/7000
Grains per cubic foot	Grams per cubic meter	2.2884
Grains per Gallon	Parts per million	17.118
Grams	Drams (avoirdupois)	0.5644
Grams	Drams (troy)	0.2572
Grams	Grains	15.432
Grams	Kilograms	0.001
Grams	Pounds (avoirdupois)	0.0022046
Grams	Pounds (troy)	0.002679
Grams per cubic centimetre	Pounds per cubic foot	62.43
Grams per cubic centimetre	Pounds per gallon	8.345
Grams per litre	Grains per gallon	58.42
Grams per litre	Pounds per cubic foot	0.0624
Grams per square centimetre	Pounds per cubic foot	2.0482
Grams per square centimetre	Pounds per square inch	0.014223
Hectares	Acres	2.4471
Hectares	Square meter	10,000
Horsepower (British)	BTU per minute	42.42
Horsepower (British)	BTU. per hour	2545
Horsepower (British)	Foot-pounds per minute	33,000
Horsepower (British)	Foot-pounds per second	550
Horsepower (British)	Watts	745.7
Horsepower (British)	Horsepower	1.0139
Horsepower (British)	Pounds carbon to CO ₂ per hour	0.175
Horsepower (British)	Pounds, water evaporated per hour at 212 F	2.64
Horsepower (metric)	Foot-pounds per second	542.47
Horsepower (metric)	Kilogram-meters per second	75.0
Hours(mean solar)	Seconds	3600
Inches	Meters	0.0254
Inches of mercury at 60 F	Newton's per square meter	3376.9
Inches of water at 60 F	Newton's per square meter	248.84
Joules (absolute)	BTU (mean)	9.480×10 ⁻⁴
Joules (absolute)	Calories, gram (mean)	0.2389
Joules (absolute)	Cubic foot-atmospheres	0.3485
Joules (absolute)	Foot-pounds	0.7376
Joules (absolute)	Kilowatt-hours	2.7778×10 ⁻⁷
Joules (absolute)	Liter-atmosphere	0.009869
Kilocalories	Joules	4186.8
Kilograms	Pounds (avoirdupois)	2.2046
Kilograms force	Newton's	9.807
Kilograms per square centimetre	Pounds per square inch	14.223
Kilometres	Miles	0.6214
Kilowatt-hours	BTU	3414
Kilowatt-hours	Foot-pounds	2.6552×10 ⁶
Kilowatts	Horsepower	1.3410
Knots (international)	Meters per second	0.5144
Knots (nautical miles per hour)	Miles per hour	1.1516
Lambers	Candles per square inch	2.054
Liter-atmospheres	Cubic foot atmospheres	0.03532
Litter-atmospheres	Foot-pounds	74.74
Litres	Cubic feet	0.03532
Litres	Cubic meters	0.001
Litres	Gallons	0.26418
Lumens	Watt	0.001496
Micro microns	Microns	1.0×10 ⁻⁶

Microns	Angstrom units	1.0×10 ⁴
Microns	Meters	1.0×10 ⁻⁶
Miles (nautical)	Feet	6080
Miles (nautical)	Miles (U.S. statute)	1.1516
Miles	Feet	5280
Miles	Meters	16.9.3
Miles per hour	Feet per second	1.4667
Miles per hour	Meters per second	0.4470
Milliliters	Cubic centimetres	1
Milliliters	Meters	0.001
Milliliters of mercury at 0 C	Newton's per square meter	133.32
Mill microns	Microns	0.001
Mils	Inches	0.001
Mils	Meters	2.54 × 10 ⁻⁵
Minims (U.S.)	Cubic centimetres	0.06161
Minutes (angle)	Radians	2.909 × 10 ⁻⁴
Minutes (mean solar)	Seconds	60
Newton's	Kilograms	0.110197
Ounces (avoirdupois)	Kilograms	0.02835
Ounces (avoirdupois)	Ounces (troy)	0.9115
Ounces (U.S fluids)	Cubic meters	2.957 × 10 ⁻⁵
Ounces (troy)	Ounces (apothecaries)	1.000
Pints (US. Liquid)	Cubic meters	4.732 × 10 ⁻⁴
Poundals	Newton's	0.13826
Pounds (avoirdupois)	Grains	7000
Pounds (avoirdupois)	Kilograms	0.45359
Pounds (avoirdupois)	Pounds (troy)	1.2153
Pounds per cubic foot	Grams per cubic centimetre	0.016018
Pounds per cubic foot	Kilograms per cubic meter	16.1018
Pounds per square foot	Atmospheres	4.725 × 10 ⁻⁴
Pounds per square foot	Kilograms per square meter	4.882
Pounds per square inch	Atmosphere	0.06805
Pounds per square inch	Kilograms per square centimetre	0.07031
Pounds per square inch	Newton's per square meter	6894.8
Pounds Force	Newton's	4.44852
Pounds force per square foot	Newton's per square meter	47.88
Pounds water evaporated from and at 212 F	Horsepower-hours	0.379
Pounds-centigrade units (p.c.u)	BTU	1.8
Quarts (U.S. liquid)	Cubic meters	9.464 × 10 ⁻⁴
Radians	Degrees	57.30
Revolutions per minute	Radians per second	0.10472
Seconds (angle)	radians	4.848 × 10 ⁻⁶
Slugs	Gee pounds	1
Slugs	Kilograms	14.594
Slugs	Pounds	32.17
Square centimetres	Square feet	0.001010764
Square feet	Square meters	0.0929
Square feet per hour	Square meters per second	2.581 × 10 ⁻⁵
Square inches	Square centimetres	6.452
Square inches	Square meters	6.452 × 10 ⁻⁴
Square yards	Square meters	0.8361
Stokes	Square meters per second	1.0 × 10 ⁻⁴
Tons (long)	Kilograms	1016
Tons (long)	Pounds	2240
Tons (metric)	Kilograms	1000
Tons (metric)	Pounds	2204.6
Tons (metric)	Tons (short)	1.1023
Tons (short)	Kilograms	907.18
Tons(short)	Pounds	2000
Tons (refrigeration)	BTU per hour	12,000
Tons (British. shipping)	Cubic Feet	42.00
Tons (U.S shipping)	Cubic Feet	40.00
Torr (mm. mercury, 0 C)	Newton's per square meter	133.32
Watts	BTU per hour	3.413
Watts	Joules per second	1
Watts	Kilogram-meters per second	0.10197
Watt-hours	Joules	3600
Yards	Meters	0.9144

UNITS AND CONVERSIONS

Table 10-T-12 : Conversion To SI Units

	Multiply	By	To obtain	Multiply	By	To obtain
acre		0.4047	Ha	In.lb (torch moment)	113	mN.m
bar		*100	Kpa	In ²	645	mm ²
barrel (42 U.S.gal petroleum)		159	L	In ³ (volume)	16.4	mL
		0.159	m ³	In ³ min(SCIM)	0.273	mL/s
BTU(International Table)		1.055	kJ	In ³ (section modules)	16400	mm ³
BTU/ft ³		37.3	KJ/m ³ ,J/ l	In ⁴ (section moment)	416200	mm ⁴
BTU / gal		0.279	kJ/L	Km/h	0.278	m/s
BTU * ft / h / * ft ² * °F		1.731	W /(m*K)	kWh	*3.60	MJ
BTU * in /(h * ft ² * °F) thermal conductivity		0.1442	W / (m*k)	KW /1000cfm	2.12	J/L
				Kilopond (Kgforce)	9.81	N
BTU/h		0.2931	W	Kip (1000 lb)	4.45	kN
BTU / ft ²		11.36	kJ/m ²	Kip /in ² (ksi)	6.895	MPa
BTU /(h * ft ²)		3.155	W/ m ²	Litre	*0.001	m ³
BTU / (h * ft * ° F)				Met	*58.15	W/m ²
(overall heat transfer coefficient, U)		5.678	WW / (m ² *K)	Microm(m) of mercury (60°F)	133	MPa
BTU / b		2.326	Kj /kg	Mile	1.61	Km
BTU / (lb * °F)		4.184	Kj /kg*K	Mile, nautical	1.85	Km
(specific heat, c _p)						
Bushel		0.03624	m ³	Mph	1.61	Km/h
Calory, gram		4.187	J	Mph	0.447	m/s
Calory, Kilogram; Kilocalory		4.187	kJ	Millibar	*0.100	kPa
Centipoise, dynamic viscosity, m		*1.00	mPa*s	Mm of mercury (60° F)	0.133	kPa
Centistokes, Kinematic viscosity		*1.00	mm ² /s	Mm of water (60°F)	9.80	Pa
clo		0.155	m ² *K/W	Ounce (mass, avoirdupois)	28.35	g
dyne per cm ²		*0.100	Pa	Ounce (force or thrust)	0.278	N
EDR hot water (150 BTU/h)		44.0	W	Ounce (liquid, U.S)	29.6	mL
EDR steam (240 BTU/h)		70.3	W	Ounce inch (torque, moment)	7.06	mN*m
EER		0.293	COP	Ounce (avoirdupois) per gal.	7.49	g/L
↑		*0.3048	m	Perm (permeance)	57.45	ng/(s*m ² .Pa)
↑		*304.8	mm	Perm inch (permeability)	1.46	Ng(s*m*Pa)
ft / min, fpm		*0.00508	m/s	Pint (liquid, U.S)	473	ML
ft/s, fps		*0.3048	m/s	Pound		
ft of water		2.99	kPa	Lb (mass)	0.4536	Kg
ft of water/100 ft pipe		0.0981	kPa/m	Lb (mass)	453.6	G
ft ²		0.09290	m	Lb _r (force or thrust)	4.45	g
ft ² * h*° F /BTU (thermal Resistance, R)		0.176	m ² K/W	Lb /ft(uniform load)	1.49	Kg/m
ft ² /s, Kinematic viscosity n		92.900	mm/s	Lb _m /(ft*h) (dynamic viscosity)	0.413	mPa*s
ft ³		28.32	L	Lb /(ft*s) dynamic viscosity,m)	1490	mPa*s
ft ³		0.02832	m ³	Lb _r s/ft ² (dynamic viscosity)	47.88	Pa*s
ft ³ /h, cfh		7.866	mL/s	Lb /h	0.126	g/s
ft ³ /min/cfm		0.4719	L/s	Lb /min	0.00756	Kg/s
ft ³ /s, cfs		28.32	L/s	Lb/h (steam at 212°F (100° C)	0.284	kW
ft*lb,(torque or moment)		1.36	N*m	Lb/ft ²	47.9	Pa
Ft-lb(work)		1.36	J	Lb/ft ²	4.88	Kg/m ²
ft-lb/ lb (specific energy)		2.99	j/kg	Lb /ft ³ (density, r)	16.0	Kg /m ³
ft-lb/ min power		0.0226	W	Lb /gallon	120	Kg /m ³
Footcandle		1.076	l*	Ppm (by mass)	*1.00	Mg/kg
gallon (U.S., *231 in ³)		3.7854	L	Psi	6.895	kPa
gph		1.05	mL/s	Quad	1.055	EJ
gpm		0.0631	L/s	Quart (liquid U.S)	0.946	L
gpm/ft ²		0.6791	L/(s* m ²)	Square (100ft ²)	9.29	M ²
gpm/ton refrigeration		0.0179	mL /J	Tablespoon (approximately)	15	mL
grain (1/7000lb)		0.0648	g	Tablespoon (approximately)	5	mL
gr/gal		17.1	mg /L	Therm (U.S)	105.5	MJ
gr/lb		0.143	g/kg	Ton, long (2240 lb)	1.016	Mg
Horsepower (boiler)		9.81	kW	Ton, short (2000 lb)	0.907	Mg
Horsepower (550 fp:lb/s)		0.746	kW	Ton, refrigeration (12000 BTU/h)	3.52	kW
inch		*25.4	mm	Torr (1mm Hg at 0 °C)	133	Pa
in. of mercury (60 F)		3.377	kPa	Watt per square foot	10.8	W/m ²
In. of water (60 F)		248.8	Pa	Yd	*0.9144	M
In /100ft, thermal expansion		0.833	mm/m	Yd ²	0.836	m ²
				Yd ³	0.7646	m ³
To Obtain		By	Divide	To Obtain	By	Divide

Note : Units are U.S. values unless noted otherwise.
* conversion factor is exact.

Table 10-T-13 : Conversion Factors

Pressure	In. of water (60° F)	In. Hg (32° F)	Mm Hg atmosphere	Mm Hg (32° F)	bar	Kgf/cm ²	Pascal	
1	= 27.708	= 2.0360	= 0.068046	= 51.715	= 0.069948	= 0.07030696	= 6894.8	
0.036091	1	0.073483	2.4559×10 ⁻³	1.8665	2.4884 × 10 ⁻³	2.537 × 10 ⁻³	248.84	
0.491154	13.609	1	0.033421	25.400	0.033864	0.034532	3386.4	
14.6960	407.19	29.921	1	760.0	1.101325*	1.03323	101.325*	
0.0193368	0.53578	0.03937	0.00131579	1	0.0013332	0.0013595	133.32	
14.5038	401.86	29.530	0.98692	750.062	1	1.01972	10 ⁵ *	
14.223	394.1	28.959	0.96784	735.559	0.98066	1	98,066.5*	
1.45038×10 ⁻⁴	4.0186 × 10 ⁻³	2.953 × 10 ⁻⁴	9.8962 × 10 ⁻⁶	0.00750	10 ⁻⁵	1.0192 × 10 ⁻⁵	1	
Mass	Lb (avoir.)		Grain		Ounce (avoir)		Kg	
	1		=7000*		=16*		=0.45359	
	1.4286 × 10 ⁻⁴		1		2.2857 × 10 ⁻³		6.4800×10 ⁻⁵	
	0.06250		437.5*		1		0.028350	
	2.20462		15,432		35.274		1	
Volume	Cubic Inch		Cubic foot		gallon	Litre	Cubic metre (m)	
	1		=5.787×10 ⁻⁴		=4.239×10 ⁻³	=0.0163871	=1.63871 × 10 ⁻⁵	
	1728*		1		7.08455	28.317	0.028317	
	231.0*		0.13368		1	3.7854	0.0037854	
	61.002374		0.035315		0.264173	1	0.001*	
	61,023.74		35.315		264.173	10000	1	
Energy	BTU		ft*lb		Calorie (cal)	Joule (J)	Watt-second (w*s)	
	1		=778.17		=251.9957	=1055.056	1055.056	
	102851 × 10 ⁻³		1		0.32383	1.355818	1.355818	
	3.9683 × 10 ⁻³		3.08803		1	4.1868	4.1868	
	9.4782 × 10 ⁻⁴		0.73756		0.23885	1	1	
Density	Lb /ft³		Lb/gal		g/cm³		Kg/m³(g/L)	
	1		=0.133680		=0.016018		16.018463	
	7.48055		1		0.119827		119.827	
	62.4280		8.34538		1		1000	
	0.0624280		0.008345		0.001		1	
Specific Volume	ft³/lb		Gal/ lb		Cm³/g		m³/kg(L/g)	
	1		=7.48055		=62.4280		=0.0624280	
	0.133680		1		8.34538		0.008345	
	0.016018		0.119827		1		0.001	
	16.018463		119.827		10000		1	
Specific Heat or Entropy	BTU /lb* °F		Cal/ (g*K)		kJ(kg*K)			
	1		=1		=4.1868*			
	1.0		1		4.1868*			
	0.23885		0.23885		1			
Enthalpy	BTU /lb		Cal /g		J/g			
	1		=0.5556		= 2.326*			
	1.8		1		4.1868*			
	0.42992		0.23885		1			
Thermal Conductivity	BTU/h*ft² °F		Cal / (s*m² °C)		W /(m*K)			
	1		=4.138 × 10 ⁻³		=1.7307			
	241.91		1		418.68			
	0.57779		2.3885 × 10 ⁻³		1			
Viscosity (absolute)	poise	1 poise = 1 dyne=sec/cm ² = C.a Pa*s = 1 g/(cm*s)						
		lb * s/ ft²	lb*h /ft²	kg / (m*s)	N*s / m²	lb_m / (ft*s)		
	1	= 2.0885 × 10 ⁻³	= 5.8014 × 10 ⁻⁷	= 0.1	= 0.1	= 6.71955 × 10 ⁻²		
	478.8026	1	2.7778 × 10 ⁻⁴	47.88026	47,88026	32.17405		
	1,723,689	3600	1	172,369	172,369	115,827		
	10	0.020885	5.8014 × 10 ⁻⁶	1	1	0.0671955		
	14.8819	3.1081 × 10 ⁻²	8.6336 × 10 ⁻⁶	1.4882	1.4882	1		
Coefficient of Heat Transfer	BTU / h*ft² °F		cal / (s*cm² °C)		kcal / (h*m² °C)		W / (m²*K)	
	1		= 1.3562 × 10 ⁻⁴		= 4.8824		= 5,6783	
	7373.5		1		36,000		41,868*	
	0.2048		2.7778 × 10 ⁻⁵		1		1.1630*	
	0.1761		2.3885 × 10 ⁻⁵		0.8598		1	

Table 10-T-14 : Temperature Converter

Deg C	Deg F	Deg C	Deg F	Deg C	Deg F
-40	-40.00	+15	+59.0	+70	+158.0
-39	-38.2	+16	+60.8	+71	+159.8
-38	-36.4	+17	+62.6	+72	161.6
-37	-34.6	+18	+64.4	+73	163.4
-36	-32.8	+19	+66.2	+74	165.2
-35	-31.0	+20	+68.0	+75	167.0
-35	-29.2	+21	+69.8	+76	168.8
-33	-27.4	+22	+71.6	+77	170.6
-32	-25.6	+23	+73.4	+78	172.4
-31	-23.8	+24	+75.2	+79	174.2
-30	-22.0	+25	+77.0	+80	176.0
-29	-20.2	+26	+78.8	+81	177.8
-28	-18.4	+27	+80.6	+82	179.6
-27	-16.6	+28	+82.4	+83	181.4
-26	-14.8	+29	+84.2	+84	183.2
-25	-13.0	+30	+86.0	+85	185.0
-24	-11.2	+31	+87.8	+86	186.8
-23	-9.4	+32	+89.6	+87	188.6
-22	-7.6	+33	+91.4	+88	190.4
-21	-5.8	+34	+93.2	+89	192.2
-20	-4.0	+35	+95.0	+90	194
-19	-2.2	+36	+96.8	+91	195.8
-18	-0.4	+37	+98.6	+92	187.6
-17	+1.4	+38	+100.4	+93	199.4
-16	+3.2	+39	+102.2	+94	201.2
-15	+5.0	+40	+104.0	+95	203
-14	+6.8	+41	+105.8	+96	204.8
-13	+8.6	+42	+107.6	+97	206.6
-12	+10.4	+43	+109.4	+98	208.4
-11	+12.2	+44	+111.2	+99	210.0
-10	+14.0	+45	+113.0	+100	212.0
-9	+15.8	+46	+114.8	+101	213.8
-8	+17.8	+47	+116.6	+102	215.6
-7	+19.4	+48	+118.4	+103	217.4
-6	+21.2	+49	+120.2	+104	219.2
-5	+23.0	+50	122.0	+105	221.0
-4	+24.8	+51	+123.8	+106	222.8
-3	+26.6	+52	+125.6	+107	224.6
-2	+28.4	+53	+127.4	+108	226.4
-1	+30.2	+54	+129.2	+109	228.2
0	+32.0	+55	+131.0	+110	230.0
+1	+33.8	+56	+132.8	+111	231.8
+2	+35.6	+57	+134.6	+112	233.6
+3	+37.4	+58	136.4	+113	235.4
+4	+39.2	+59	+138.2	+114	237.2
+5	+41.0	+60	+140.0	+115	239.0
+6	+42.8	+61	+141.8	+116	240.8
+7	+44.6	+62	+143.6	+117	242.6
+8	+46.4	+63	+145.4	+118	244.4
+9	+48.2	+64	+147.2	+119	246.2
+10	+50.0	+65	+149.0	+120	248.0
+11	+51.8	+66	+150.8	+121	249.8
+12	+53.6	+67	+152.6	+122	+251.6
+13	+55.4	+68	+154.4	+123	253.4
+14	+57.2	+69	+156.2	+124	+255.2
$C = 5/9 (F - 32)$			$F = 9/5(C) + 32$		