

Mechanical Conversion Table

Length

	mm	cm	m	inch	foot	yard	km	Mile
mm	1	10 ⁻¹	10 ⁻³	3.937 x 10 ⁻²	3.280 x 10 ⁻³	1.093 x 10 ⁻³	10 ⁻⁶	6.213x10 ⁻⁷
cm	10	1	10 ⁻²	3.937 x 10 ⁻¹	3.280 x 10 ⁻²	1.093 x 10 ⁻²	10 ⁻⁵	6.213x10 ⁻⁶
m	1000	100	1	39.370	3.28084	1.09361	10 ⁻³	6.213x10 ⁻⁴
Inch	25.4	2.54	2.54 x 10 ⁻²	1	8.333 x 10 ⁻²	2.777 x 10 ⁻²	2.54 x 10 ⁻⁵	1.578x10 ⁻⁵
foot	304.8	30.48	3.048 x 10 ⁻¹	12	1	3.333 x 10 ⁻¹	3.048 x 10 ⁻⁴	1.893x10 ⁻⁴
yard	914.4	91.44	9.144 x 10 ⁻¹	36	3	1	9.144 x 10 ⁻⁴	5.681x10 ⁻⁴
km	10 ⁶	10 ⁵	1000	39370.1	3280.84	1093.61	1	6.213x10 ⁻¹
mile	1.609 x 10 ⁶	160934	1609.34	63360	5280	1760	1.609	1

Mass

	g	kg	oz	lb	US ton
g	1	10 ⁻³	3.5274 x 10 ⁻²	2.204 x 10 ⁻³	1. 102 x 10 ⁻⁶
kg	1000	1	35.274	2.20462	1.102 x 10 ⁻³
oz	28.2495	2.835 x 10 ⁻²	1	6.25 x 10 ⁻²	3.125 x 10 ⁻⁵
lb	453.592	4.536 x 10 ⁻¹	16	1	5 x 10 ⁻⁴
US ton	907185	907.185	32	2000	1

Energy

	J	Wh	kp m	k cal	BTU
J	1	2778 x 10 ⁻⁴	1.019 x 10 ⁻¹	2.388 x 10 ⁻⁴	9.478 x 10 ⁻⁴
Wh	3600	1	367.098	8.598 x 10 ⁻¹	3.412
kp m	9.807	2.724 x 10 ⁻³	1	2.342 x 10 ⁻³	9.295 x 10 ⁻³
k cal	4186.8	1.163	426.935	1	3.968
BTU	1055.06	2.93 1 x 10 ⁻¹	107.586	2.519 x 10 ⁻¹	1

Symbols & Formulae

Area

	cm ²	m ²	are	hect.	km ²	inch ²	foot ²	yard ²	mile ²	acre
cm ²	1	10 ⁻⁴	10 ⁻⁶	10 ⁻⁸	10 ⁻¹⁰	1.55 × 10 ⁻¹	1.076 × 10 ⁻³	1.196 × 10 ⁻⁴	3.861 × 10 ⁻¹¹	2.471 × 10 ⁻⁸
m ²	10000	1	10 ⁻²	10 ⁻⁴	10 ⁻⁶	1550	10.7639	1.19599	3.861 × 10 ⁻⁷	2.471 × 10 ⁻⁴
are	10 ⁶	100	1	10 ⁻²	10 ⁻⁴	155000	1076.39	119599	3.861 × 10 ⁻⁵	2.471 × 10 ⁻²
hectare	10 ⁸	10000	100	1	10 ⁻²	1.55 × 10 ⁷	107639	11959.9	3.861 × 10 ⁻³	2.47105
km ²	10 ¹⁰	10 ⁶	10000	100	1	1.55 × 10 ⁹	1.076 × 10 ⁷	1.196 × 10 ⁶	3.861 × 10 ⁻¹	247.105
inch ²	6.4516	6.4516 × 10 ⁻⁴	6.4516 × 10 ⁻⁶	6.4516 × 10 ⁻⁸	6.4516 × 10 ⁻¹⁰	1	6.944 × 10 ⁻³	7.716 × 10 ⁻⁴	2.491 × 10 ⁻¹⁰	1.594 × 10 ⁻⁷
foot ²	929.03	9.2903 × 10 ⁻²	9.2903 × 10 ⁻⁴	9.2903 × 10 ⁻⁶	9.2903 × 10 ⁻⁸	144	1	1.1111 × 10 ⁻¹	3.587 × 10 ⁻⁸	2.295 × 10 ⁻⁵
yard ²	8.36127	8.36127 × 10 ⁻¹	8.36127 × 10 ⁻³	8.36127 × 10 ⁻⁵	8.36127 × 10 ⁻⁷	1296	9	1	3.228 × 10 ⁻⁷	2.066 × 10 ⁻⁴
mile ²	2.589 × 10 ¹⁰	2.589 × 10 ⁶	25899.9	258.999	2.58999	4.014 × 10 ⁹	2.787 × 10 ⁷	2.0976 × 10 ⁶	1	640
acre	4.046 × 10 ⁷	4046.86	40.4686	4.04686 × 10 ⁻¹	4.04686 × 10 ⁻³	6.272 × 10 ⁶	43560	4840	1.5625 × 10 ⁻³	1

Volume

	cm ³	dm ³ (=litre)	inch ³	foot ³	yard ³	US fl oz	Imp fl oz	US gal	Imp gal	Imp pint
cm ³	1	10 ⁻³	6.102 × 10 ⁻²	3.531 × 10 ⁻⁵	1.308 × 10 ⁻⁶	3.3814 × 10 ⁻²	3.519 × 10 ⁻²	2.641 × 10 ⁻⁴	2.199 × 10 ⁻⁴	1.759 × 10 ⁻³
dm ³	1000	1	61.0237	3.531 × 10 ⁻²	1.308 × 10 ⁻³	33.814	35.1951	2.641 × 10 ⁻¹	2.199 × 10 ⁻¹	1.75975
inch ³	16.3871	1.638 × 10 ⁻²	1	5.787 × 10 ⁻⁴	2.143 × 10 ⁻⁵	5.541 × 10 ⁻¹	5.767 × 10 ⁻¹	4.329 × 10 ⁻³	3.604 × 10 ⁻³	2.883 × 10 ⁻²
foot ³	28316.8	28.3168	1728	1	3.7037 × 10 ²	957.506	996.614	7.48052	6.22884	49.8307
yard ³	764555	764.555	46656	27	1	25852.7	26.908.6	201.974	168.179	1345.43
US fl oz	29.5735	2.957 × 10 ⁻²	1.80469	1.044 × 10 ⁻³	3.868 × 10 ⁻⁵	1	1.04084	7.8125 × 10 ⁻³	6.505 × 10 ⁻³	5.204 × 10 ⁻²
Imp fl oz	28.4131	2.841 × 10 ⁻²	1.73387	1.003 × 10 ⁻³	3.716 × 10 ⁻⁵	9.6076 × 10 ⁻¹	1	7.506 × 10 ⁻³	6.25 × 10 ⁻³	5 × 10 ⁻²
US gal	3785.41	3.78541	231	1.336 × 10 ⁻¹	4.951 × 10 ⁻³	128	133.228	1	8.326 × 10 ⁻¹	6.66139
Imp gal	4546.09	4.54609	277.149	1.605 × 10 ⁻¹	5.946 × 10 ⁻³	153.772	160	1.20095	1	8
Imp pint	568.261	5.682 × 10 ⁻¹	34.6774	2.0068 × 10 ⁻²	7.432 × 10 ⁻⁴	19.2152	20	1.501 × 10 ⁻¹	1.25 × 10 ⁻¹	1

Inertia

	kg cm ²	kp cm s ²	kg m ²	kp m s ²	oz in ²	oz in s ²	lb in ²	lb in s ²	lb ft ²	lb ft s ²
kg cm ²	1	1.019 x 10 ⁻³	10 ⁻⁴	1.019 x 10 ⁻⁵	5.467	1.416 x 10 ⁻²	3.417 x 10 ⁻¹	8.850 x 10 ⁻⁴	2.373 x 10 ⁻³	7.375 x 10 ⁻⁵
kp cm s ²	980.665	1	9.806 x 10 ⁻¹²	10 ⁻²	5361.76	13.8874	335.11	8.679 x 10 ⁻¹	2.32715	7.233 x 10 ⁻²
kg m ²	10 ⁴	10.1927	1	1.019 x 10 ⁻¹	54674.8	141.612	3417.17	8.851	23.7304	7.375 x 10 ⁻¹
kp m s ²	98066.5	100	9.86065	1	536176	1388.74	33.511	86.796	232.715	7.23301
oz in ²	1.829 x 10 ⁻¹	1.865 x 10 ⁻⁴	1.829 x 10 ⁻⁵	1.865 x 10 ⁻⁶	1	2.590 x 10 ⁻³	6.25 x 10 ⁻²	1.6188 x 10 ⁻⁴	2.340 x 10 ⁻⁴	7.349 x 10 ⁻⁵
oz in s ²	70.6155	7.201 x 10 ⁻²	7.061 x 10 ⁻³	7.200 x 10 ⁻⁴	386.089	1	24.1305	6.25 x 10 ⁻²	1.675 x 10 ⁻¹	5.208 x 10 ⁻³
lb in ²	2.926	2.984 x 10 ⁻³	2.9264 x 10 ⁻⁴	2.984 x 10 ⁻⁵	16	4.144 x 10 ⁻²	1	2.590 x 10 ⁻³	6.944 x 10 ⁻³	2.1548x10 ⁻⁴
lb in s ²	1129.85	1.15212	1.29 x 10 ⁻¹	1.152 x 10 ⁻²	6177.42	16	386.089	1	2.68117	8.333 x 10 ⁻²
lb ft ²	421.401	4.297 x 10 ⁻¹	4.214 x 10 ⁻²	4.2971 x 10 ⁻³	2304	5.96754	144	3.729 x 10 ⁻¹	1	3.108 x 10 ⁻²
lb ft s ²	13558.2	13.826	1.355	1.382 x 10 ⁻¹	74129	192	4633.06	12	32.174	1

Torque

	N cm	Nm	kp cm	kp m	p cm	oz in	in lb	ft lb
N cm	1	10 ⁻²	1.019 x 10 ⁻¹	1.019 x 10 ⁻³	101.972	1.41612	8.850 x 10 ⁻²	7.375 x 10 ⁻³
Nm	100	1	10.1972	1.019 x 10 ⁻¹	10197.2	141.612	8.851	7.375 x 10 ⁻¹
kp cm	9.80665	9.806 x 10 ⁻²	1	10 ⁻²	1000	13.8874	8.679 x 10 ⁻¹	7.233 x 10 ⁻²
kp m	980.665	9.80665	100	1	10 ⁵	1388.74	86.7962	7.233
p cm	9.806 x 10 ⁻³	9.806 x 10 ⁻⁵	10 ⁻³	10 ⁻⁵	1	1.388 x 10 ⁻²	8.679 x 10 ⁻⁴	7.233 x 10 ⁻⁵
oz in	7.061 x 10 ⁻¹	7.061 x 10 ⁻³	7.200 x 10 ⁻²	7.200 x 10 ⁻⁴	72.0078	1	6.25 x 10 ⁻²	5.208 x 10 ⁻³
in lb	11.2985	1.129 x 10 ⁻¹	1.15212	1.152 x 10 ⁻²	1152.12	16	1	8.333 x 10 ⁻²
ft lb	135.582	1.35582	13.8225	1.382 x 10 ⁻¹	13825.5	192	12	1

Force

	N	kp	p	oz	lbf
N	1	1.019 x 10 ⁻¹	101.972	3.59694	2.248 x 10 ⁻¹
kp	9.80665	1	1000	35.274	2.20462
p	9.806 x 10 ⁻³	10 ⁻³	1	3.5274 x 10 ⁻²	2.204 x 10 ⁻³
oz	2.780 x 10 ⁻¹	2.835 x 10 ⁻²	28.3595	1	6.25 x 10 ⁻²
lbf	4.44822	4.536 x 10 ⁻¹	453.592	16	1

Power

	kW	PS	hp	kp m s ⁻¹	kcal s ⁻¹
kW	1	1.35962	1.34102	101972	2.388 x 10 ⁻¹
PS	7.355 x 10 ⁻¹	1	9.8632 x 10 ⁻¹	75	1.756 x 10 ⁻¹
hp	7.457 x 10 ⁻¹	1.01387	1	76.0402	1.781 x 10 ⁻¹
kp ms ⁻¹	9.806 x 10 ⁻³	1.333 x 10 ⁻²	1.35 15 x 10 ⁻²	1	2.342 x 10 ⁻³
kcal s ⁻¹	4.1868	5.69246	5.61459	426.935	1