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Force Conversion Chart

Newtons, kilonewtons, kilogram-force, pound-force and kips

For: Engineers, physics students, riggers and mechanics

allunitconversions.com/force-conversion-chart
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EXACT DEFINITION	FORMULA	REVERSE	WORKED EXAMPLE
1 kgf = 9.806 65 N; 1 lbf = 4.448 221 615 N (both exact)	N = lbf × 4.448 22; N = kgf × 9.806 65	lbf = N ÷ 4.448 22; kgf = N ÷ 9.806 65	A 1,000 kg load weighs 9.807 kN = 2,204.6 lbf under standard gravity

Matrix values use 6 significant figures. Weight = mass × 9.806 65 m/s² (standard gravity).

Factor matrix — 1 unit in every other unit

1 unit =	N	kN	kgf	tf	lbf	kip	ozf	dyn
1 N	1	0.001	0.101972	1.01972×10^{-4}	0.224809	2.24809×10^{-4}	3.59694	100,000
1 kN	1,000	1	101.972	0.101972	224.809	0.224809	3,596.94	1×10^{8}
1 kgf	9.80665	0.00980665	1	0.001	2.20462	0.00220462	35.274	980,665
1 tf	9,806.65	9.80665	1,000	1	2,204.62	2.20462	35,274	9.80665×10^{8}
1 lbf	4.44822	0.00444822	0.453592	4.53592×10^{-4}	1	0.001	16	444,822
1 kip	4,448.22	4.44822	453.592	0.453592	1,000	1	16,000	4.44822×10^{8}
1 ozf	0.278014	2.78014×10^{-4}	0.0283495	2.83495×10^{-5}	0.0625	6.25×10^{-5}	1	27,801.4
1 dyn	1×10^{-5}	1×10^{-8}	1.01972×10^{-6}	1.01972×10^{-9}	2.24809×10^{-6}	2.24809×10^{-9}	3.59694×10^{-5}	1

Newtons to pound-force and kilogram-force

Newtons (N)	Pound-force (lbf)	Kilogram-force (kgf)
1	0.225	0.102
2	0.450	0.204
3	0.674	0.306
4	0.899	0.408
5	1.124	0.510
6	1.349	0.612
7	1.574	0.714
8	1.798	0.816
9	2.023	0.918
10	2.248	1.020
20	4.496	2.039
30	6.744	3.059
40	8.992	4.079
50	11.240	5.099
60	13.489	6.118
70	15.737	7.138

Newtons (N)	Pound-force (lbf)	Kilogram-force (kgf)
80	17.985	8.158
90	20.233	9.177
100	22.481	10.197
200	44.962	20.394
300	67.443	30.591
400	89.924	40.789
500	112.404	50.986
600	134.885	61.183
700	157.366	71.380
800	179.847	81.577
900	202.328	91.774
1,000	224.809	101.972
2,000	449.618	203.943
5,000	1,124.045	509.858
10,000	2,248.089	1,019.716

Kilonewtons to pound-force and tonne-force

Kilonewtons (kN)	Pound-force (lbf)	Tonne-force (tf)
1	225	0.102
2	450	0.204
3	674	0.306
4	899	0.408

Kilonewtons (kN)	Pound-force (lbf)	Tonne-force (tf)
15	3,372	1.530
20	4,496	2.039
25	5,620	2.549
50	11,240	5.099

Kilonewtons (kN)	Pound-force (lbf)	Tonne-force (tf)
5	1,124	0.510
6	1,349	0.612
7	1,574	0.714
8	1,798	0.816
9	2,023	0.918
10	2,248	1.020

Kilonewtons (kN)	Pound-force (lbf)	Tonne-force (tf)
75	16,861	7.648
100	22,481	10.197
200	44,962	20.394
500	112,404	50.986
1,000	224,809	101.972

Torque

From	To	Multiply by
Newton-metres (N·m)	Pound-force feet (lbf·ft)	0.7375621
Pound-force feet (lbf·ft)	Newton-metres (N·m)	1.355818
Kilogram-force metres (kgf·m)	Newton-metres (N·m)	9.80665

Sources and method

- **NIST Special Publication 811** — Guide for the Use of the International System of Units (www.nist.gov/pml/special-publication-811)
- **BIPM SI Brochure, 9th edition** — Definitions of the SI units, including the kelvin (www.bipm.org/en/publications/si-brochure)

Conversion values on this sheet are generated by the AllUnitConversions conversion library and automatically checked against the exact definitions above before the PDF is produced; reference tables are taken from the sources listed. Interactive version, corrections and more charts: **allunitconversions.com/force-conversion-chart**