ALLUNITCONVERSIONS · PRINTABLE REFERENCE

Site Engineer Reference Pack

Rebar sizes and weights, slopes, concrete volumes, inches to decimal feet, lengths and engineering factors in one PDF

For: Site and setting-out engineers, surveyors, construction managers and civil engineering students

allunitconversions.com/charts/packs
By Miguel Coelho · Edition 2.0
9 November 2026

Five sheets for the site office: US and metric rebar with steel area per metre, slopes as percent, ratio and angle, and concrete volumes for slabs; engineering multiply-by factors; metric, imperial and nautical lengths; fractions of an inch and inches to decimal feet; and angles, slopes and roof pitch. Each sheet is also available on its own.

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Conversion values in this pack are generated by the AllUnitConversions conversion library and automatically checked against exact definitions (NIST SP 811, BIPM SI Brochure, 1959 International Yard and Pound Agreement) before the PDF is produced. Reference data taken from standards and regulations is cited to its source on each sheet. Free to print, copy and share with attribution (CC BY 4.0).

Printing tip: print double-sided and staple at the top left, or print single sheets from each chart's own page.

Rebar Size and Weight Chart

US #3 to #18 and metric 6 to 50 mm bars: diameter, area, weight per foot and per metre, plus site quick tables

For: Site and structural engineers, contractors, estimators, steel fixers and students

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KEY RELATIONSHIP	FORMULA	REVERSE	WORKED EXAMPLE
US bar number = nominal diameter in eighths of an inch (#3 to #8); metric bars are named by diameter in mm	kg/m = $d^2 \div 162.2$ (d in mm, steel 7,850 kg/m^3)	d (mm) = $\sqrt{(162.2 \times \text{kg/m})}$	16 mm bar: $16^2 \div 162.2$ = 1.578 kg/m; #5 bar = 1.043 lb/ft

US values as published in ASTM A615; metric masses to 3 decimals. Order and check steel to the project specification.

US reinforcing bars (ASTM A615)

Bar	Metric bar	Diameter (in)	Diameter (mm)	Area (in^2)	Area (mm^2)	lb/ft	kg/m
#3	#10	0.375	9.5	0.11	71	0.376	0.560
#4	#13	0.500	12.7	0.20	129	0.668	0.994
#5	#16	0.625	15.9	0.31	200	1.043	1.552
#6	#19	0.750	19.0	0.44	284	1.502	2.235
#7	#22	0.875	22.2	0.60	387	2.044	3.042
#8	#25	1.000	25.4	0.79	510	2.670	3.973
#9	#29	1.128	28.7	1.00	645	3.400	5.060
#10	#32	1.270	32.3	1.27	819	4.303	6.404
#11	#36	1.410	35.8	1.56	1,006	5.313	7.907
#14	#43	1.693	43.0	2.25	1,452	7.650	11.384
#18	#57	2.257	57.3	4.00	2,581	13.600	20.239

Metric reinforcing bars (EN 10080 / BS 4449)

Diameter (mm)	Area (mm^2)	kg/m	m per tonne	lb/ft	Nearest US bar
6	28.3	0.222	4,505.4	0.149	#3
8	50.3	0.395	2,534.3	0.265	#3
10	78.5	0.617	1,622.0	0.414	#3
12	113.1	0.888	1,126.4	0.597	#4
14	153.9	1.208	827.5	0.812	#4
16	201.1	1.578	633.6	1.061	#5
20	314.2	2.466	405.5	1.657	#6
25	490.9	3.853	259.5	2.589	#8
28	615.8	4.834	206.9	3.248	#9
32	804.2	6.313	158.4	4.242	#10
40	1,256.6	9.865	101.4	6.629	#14
50	1,963.5	15.413	64.9	10.357	#14

Bar area per metre width at common spacings (mm^2/m)

Area of steel per metre of slab or wall = bar area × 1000 ÷ spacing (mm).

Bar (mm)	@100	@125	@150	@175	@200	@225	@250	@300
8	503	402	335	287	251	223	201	168
10	785	628	524	449	393	349	314	262
12	1,131	905	754	646	565	503	452	377
16	2,011	1,608	1,340	1,149	1,005	894	804	670
20	3,142	2,513	2,094	1,795	1,571	1,396	1,257	1,047
25	4,909	3,927	3,272	2,805	2,454	2,182	1,963	1,636

Slope: percent, ratio and angle

Percent	Ratio (1 in …)	Degrees	mm per m
0.5%	1 in 200	0.29	5
1%	1 in 100	0.57	10
1.5%	1 in 66.7	0.86	15
2%	1 in 50	1.15	20
2.5%	1 in 40	1.43	25
3%	1 in 33.3	1.72	30
4%	1 in 25	2.29	40
5%	1 in 20	2.86	50
6%	1 in 16.7	3.43	60

Percent	Ratio (1 in …)	Degrees	mm per m
8%	1 in 12.5	4.57	80
10%	1 in 10	5.71	100
12.5%	1 in 8	7.13	125
15%	1 in 6.7	8.53	150
20%	1 in 5	11.31	200
25%	1 in 4	14.04	250
33.33%	1 in 3	18.43	333
50%	1 in 2	26.57	500
100%	1 in 1	45.00	1,000

Concrete volume for slabs

Add a waste allowance (typically 5–10%) when ordering.

Thickness (mm)	m^3 per 10 m^2	Thickness (in)	yd^3 per 100 ft^2
75	0.75	3	0.93
100	1.00	4	1.23
125	1.25	5	1.54
150	1.50	6	1.85
175	1.75	7	2.16
200	2.00	8	2.47
250	2.50	10	3.09
300	3.00	12	3.70

Sources and method

- **ASTM A615/A615M** — Deformed and plain carbon-steel bars for concrete reinforcement: nominal dimensions and masses
- **EN 10080 and BS 4449** — Steel for the reinforcement of concrete: preferred metric diameters (7,850 kg/m^3)

US bar dimensions are transcribed from ASTM A615 and cross-checked against a second published table; metric masses, areas and the site tables are calculated. Interactive version, corrections and more charts: **allunitconversions.com/rebar-size-chart**

Engineering Conversion Chart

Multiply-by factors for the units engineers convert every day, with SI prefixes

For: Mechanical, civil, HVAC and process engineers; technicians and students

allunitconversions.com/engineering-conversion-chart
By Miguel Coelho · Edition 2.0
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EXACT DEFINITION
All factors derive from 1 in = 25.4 mm, 1 lb = 0.453 592 37 kg and g_0 = 9.806 65 m/s²

FORMULA
value in "To" units = value × factor

REVERSE
value in "From" units = value ÷ factor

WORKED EXAMPLE
250 psi × 6.894 757 = 1,723.7 kPa

Factors are given to 7 significant figures.

Conversion factors

From	To	Multiply by	Typical use
Inches (in)	Millimetres (mm)	25.4	Drawings, fasteners
Feet (ft)	Metres (m)	0.3048	Site dimensions
Miles (mi)	Kilometres (km)	1.609344	Distances
Nautical miles (nmi)	Kilometres (km)	1.852	Marine, aviation
Square inches (in²)	Square centimetres (cm²)	6.4516	Cross-sections
Square feet (ft²)	Square metres (m²)	0.09290304	Floor areas
Acres (ac)	Hectares (ha)	0.4046856	Land
Cubic inches (in³)	Cubic centimetres (cm³)	16.38706	Engine displacement
Cubic feet (ft³)	Litres (L)	28.31685	Tanks, rooms
US gallons (US gal)	Litres (L)	3.785412	US liquids
UK gallons (UK gal)	Litres (L)	4.54609	UK liquids
Pounds (lb)	Kilograms (kg)	0.4535924	Mass
Pound-force (lbf)	Newtons (N)	4.448222	Loads
Kips (kip)	Kilonewtons (kN)	4.448222	Structural loads
Kilogram-force (kgf)	Newtons (N)	9.80665	Legacy metric loads
psi (psi)	Kilopascals (kPa)	6.894757	Hydraulics, tyres
psi (psi)	Bar (bar)	0.06894757	Gauges
Bar (bar)	Kilopascals (kPa)	100	Gauges
Atmospheres (atm)	Kilopascals (kPa)	101.325	Standard atmosphere
Pound-force feet (lbf·ft)	Newton-metres (N·m)	1.355818	Bolt torque
Foot-pounds (ft·lbf)	Joules (J)	1.355818	Work, impact
British thermal units (BTU)	Kilojoules (kJ)	1.055056	Heat
Kilowatt-hours (kWh)	Megajoules (MJ)	3.6	Electricity
Therms (thm)	Kilowatt-hours (kWh)	29.30711	Gas billing
Horsepower (mech.) (hp)	Kilowatts (kW)	0.7456999	Motors, engines
BTU per hour (BTU/h)	Watts (W)	0.2930711	HVAC capacity
Tons of refrigeration (RT)	Kilowatts (kW)	3.516853	Chillers
Miles per hour (mph)	Kilometres per hour (km/h)	1.609344	Vehicles
Knots (kn)	Kilometres per hour (km/h)	1.852	Marine, aviation
Feet per second (ft/s)	Metres per second (m/s)	0.3048	Fluid velocity
US gallons per minute (US gpm)	Litres per minute (L/min)	3.785412	Pumps
Cubic feet per minute (CFM)	Cubic metres per hour (m³/h)	1.699011	Air flow

Temperature

Conversion	Formula
°C to °F	°F = °C × 1.8 + 32
°F to °C	°C = (°F − 32) ÷ 1.8
°C to K	K = °C + 273.15
°F to °R	°R = °F + 459.67
Temperature difference	1 K = 1 °C = 1.8 °F = 1.8 °R

SI prefixes

Prefix	Symbol	Factor	Prefix	Symbol	Factor
quetta	Q	10^{30}	deci	d	10^{-1}
ronna	R	10^{27}	centi	c	10^{-2}
yotta	Y	10^{24}	milli	m	10^{-3}
zetta	Z	10^{21}	micro	µ	10^{-6}
exa	E	10^{18}	nano	n	10^{-9}
peta	P	10^{15}	pico	p	10^{-12}
tera	T	10^{12}	femto	f	10^{-15}
giga	G	10^{9}	atto	a	10^{-18}
mega	M	10^{6}	zepto	z	10^{-21}
kilo	k	10^{3}	yocto	y	10^{-24}
hecto	h	10^{2}	ronto	r	10^{-27}
deca	da	10^{1}	quecto	q	10^{-30}

Sources and method

- **International Yard and Pound Agreement (1959)** — 1 in = 25.4 mm, 1 ft = 0.3048 m, 1 lb = 0.453 592 37 kg exactly
- **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)

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Length Conversion Chart

Metric, imperial and nautical lengths with a full factor matrix

For: Students, engineers, builders and travellers

allunitconversions.com/length-conversion-chart
By Miguel Coelho · Edition 2.0
9 November 2026

EXACT DEFINITION	FORMULA	REVERSE	WORKED EXAMPLE
1 in = 25.4 mm; 1 ft = 0.3048 m; 1 mi = 1.609 344 km; 1 nmi = 1852 m	m = ft × 0.3048; km = mi × 1.609 344	ft = m ÷ 0.3048; mi = km ÷ 1.609 344	6 ft = 72 in = 1.8288 m

Matrix values use 6 significant figures; tables are rounded as shown.

Factor matrix — 1 unit in every other unit

1 unit =	mm	cm	m	km	in	ft	yd	mi	nmi
1 mm	1	0.1	0.001	1×10^{-6}	0.0393701	0.00328084	0.00109361	6.21371×10^{-7}	5.39957×10^{-7}
1 cm	10	1	0.01	1×10^{-5}	0.393701	0.0328084	0.0109361	6.21371×10^{-6}	5.39957×10^{-6}
1 m	1,000	100	1	0.001	39.3701	3.28084	1.09361	6.21371×10^{-4}	5.39957×10^{-4}
1 km	1×10^{6}	100,000	1,000	1	39,370.1	3,280.84	1,093.61	0.621371	0.539957
1 in	25.4	2.54	0.0254	2.54×10^{-5}	1	0.0833333	0.0277778	1.57828×10^{-5}	1.37149×10^{-5}
1 ft	304.8	30.48	0.3048	3.048×10^{-4}	12	1	0.333333	1.89394×10^{-4}	1.64579×10^{-4}
1 yd	914.4	91.44	0.9144	9.144×10^{-4}	36	3	1	5.68182×10^{-4}	4.93737×10^{-4}
1 mi	1.60934×10^{6}	160,934	1,609.34	1.60934	63,360	5,280	1,760	1	0.868976
1 nmi	1.852×10^{6}	185,200	1,852	1.852	72,913.4	6,076.12	2,025.37	1.15078	1

Inches to centimetres and millimetres

Inches (in)	Centimetres (cm)	Millimetres (mm)	Inches (in)	Centimetres (cm)	Millimetres (mm)	Inches (in)	Centimetres (cm)	Millimetres (mm)
1	2.54	25.4	**17**	43.18	431.8	**33**	83.82	838.2
2	5.08	50.8	**18**	45.72	457.2	**34**	86.36	863.6
3	7.62	76.2	**19**	48.26	482.6	**35**	88.90	889.0
4	10.16	101.6	**20**	50.80	508.0	**36**	91.44	914.4
5	12.70	127.0	**21**	53.34	533.4	**37**	93.98	939.8
6	15.24	152.4	**22**	55.88	558.8	**38**	96.52	965.2
7	17.78	177.8	**23**	58.42	584.2	**39**	99.06	990.6
8	20.32	203.2	**24**	60.96	609.6	**40**	101.60	1,016.0
9	22.86	228.6	**25**	63.50	635.0	**41**	104.14	1,041.4
10	25.40	254.0	**26**	66.04	660.4	**42**	106.68	1,066.8
11	27.94	279.4	**27**	68.58	685.8	**43**	109.22	1,092.2
12	30.48	304.8	**28**	71.12	711.2	**44**	111.76	1,117.6
13	33.02	330.2	**29**	73.66	736.6	**45**	114.30	1,143.0
14	35.56	355.6	**30**	76.20	762.0	**46**	116.84	1,168.4
15	38.10	381.0	**31**	78.74	787.4	**47**	119.38	1,193.8
16	40.64	406.4	**32**	81.28	812.8	**48**	121.92	1,219.2

Feet to metres

Feet (ft)	Metres (m)	Feet (ft)	Metres (m)	Feet (ft)	Metres (m)	Feet (ft)	Metres (m)
1	0.305	**16**	4.877	**31**	9.449	**46**	14.021
2	0.610	**17**	5.182	**32**	9.754	**47**	14.326
3	0.914	**18**	5.486	**33**	10.058	**48**	14.630
4	1.219	**19**	5.791	**34**	10.363	**49**	14.935
5	1.524	**20**	6.096	**35**	10.668	**50**	15.240
6	1.829	**21**	6.401	**36**	10.973	**51**	15.545
7	2.134	**22**	6.706	**37**	11.278	**52**	15.850

Feet (ft)	Metres (m)	Feet (ft)	Metres (m)	Feet (ft)	Metres (m)	Feet (ft)	Metres (m)
8	2.438	**23**	7.010	**38**	11.582	**53**	16.154
9	2.743	**24**	7.315	**39**	11.887	**54**	16.459
10	3.048	**25**	7.620	**40**	12.192	**55**	16.764
11	3.353	**26**	7.925	**41**	12.497	**56**	17.069
12	3.658	**27**	8.230	**42**	12.802	**57**	17.374
13	3.962	**28**	8.534	**43**	13.106	**58**	17.678
14	4.267	**29**	8.839	**44**	13.411	**59**	17.983
15	4.572	**30**	9.144	**45**	13.716	**60**	18.288

Miles to kilometres and nautical miles

Miles (mi)	Kilometres (km)	Nautical miles (nmi)	Miles (mi)	Kilometres (km)	Nautical miles (nmi)
1	1.61	0.87	**30**	48.28	26.07
2	3.22	1.74	**35**	56.33	30.41
3	4.83	2.61	**40**	64.37	34.76
4	6.44	3.48	**45**	72.42	39.10
5	8.05	4.34	**50**	80.47	43.45
6	9.66	5.21	**55**	88.51	47.79
7	11.27	6.08	**60**	96.56	52.14
8	12.87	6.95	**65**	104.61	56.48
9	14.48	7.82	**70**	112.65	60.83
10	16.09	8.69	**75**	120.70	65.17
11	17.70	9.56	**80**	128.75	69.52
12	19.31	10.43	**85**	136.79	73.86
13	20.92	11.30	**90**	144.84	78.21
14	22.53	12.17	**95**	152.89	82.55
15	24.14	13.03	**100**	160.93	86.90
16	25.75	13.90	**150**	241.40	130.35
17	27.36	14.77	**200**	321.87	173.80
18	28.97	15.64	**250**	402.34	217.24
19	30.58	16.51	**500**	804.67	434.49
20	32.19	17.38	**1,000**	1,609.34	868.98
25	40.23	21.72			

Sources and method

- **International Yard and Pound Agreement (1959)** — 1 in = 25.4 mm, 1 ft = 0.3048 m, 1 lb = 0.453 592 37 kg exactly
- **NIST Special Publication 811** — Guide for the Use of the International System of Units (www.nist.gov/pml/special-publication-811)
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Fraction to Decimal Chart

Inch fractions to decimals and millimetres in 1/64 steps, plus inches to decimal feet for construction and surveying

For: Machinists, woodworkers, builders, surveyors, students and teachers

allunitconversions.com/fraction-to-decimal-chart
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KEY RELATIONSHIP	FORMULA	REVERSE	WORKED EXAMPLE
1/64 in = 0.015625 in = 0.396875 mm exactly	Decimal = numerator ÷ denominator; mm = inches × 25.4	Fraction (to 1/64) = round(decimal × 64) ÷ 64	5/16 in = 5 ÷ 16 = 0.3125 in = 7.9375 mm

Every fraction of 1/64 has an exact decimal, shown in full; mm to 4 decimals. Decimal feet to 4 places.

Fractions of an inch to decimal inches and millimetres

Fraction	Decimal (in)	mm	Fraction	Decimal (in)	mm	Fraction	Decimal (in)	mm	Fraction	Decimal (in)	mm
1/64	0.015625	0.3969	17/64	0.265625	6.7469	33/64	0.515625	13.0969	49/64	0.765625	19.4469
1/32	0.031250	0.7938	9/32	0.281250	7.1438	17/32	0.531250	13.4937	25/32	0.781250	19.8438
3/64	0.046875	1.1906	19/64	0.296875	7.5406	35/64	0.546875	13.8906	51/64	0.796875	20.2406
1/16	0.062500	1.5875	5/16	0.312500	7.9375	9/16	0.562500	14.2875	13/16	0.812500	20.6375
5/64	0.078125	1.9844	21/64	0.328125	8.3344	37/64	0.578125	14.6844	53/64	0.828125	21.0344
3/32	0.093750	2.3812	11/32	0.343750	8.7313	19/32	0.593750	15.0812	27/32	0.843750	21.4313
7/64	0.109375	2.7781	23/64	0.359375	9.1281	39/64	0.609375	15.4781	55/64	0.859375	21.8281
1/8	0.125000	3.1750	3/8	0.375000	9.5250	5/8	0.625000	15.8750	7/8	0.875000	22.2250
9/64	0.140625	3.5719	25/64	0.390625	9.9219	41/64	0.640625	16.2719	57/64	0.890625	22.6219
5/32	0.156250	3.9688	13/32	0.406250	10.3188	21/32	0.656250	16.6688	29/32	0.906250	23.0187
11/64	0.171875	4.3656	27/64	0.421875	10.7156	43/64	0.671875	17.0656	59/64	0.921875	23.4156
3/16	0.187500	4.7625	7/16	0.437500	11.1125	11/16	0.687500	17.4625	15/16	0.937500	23.8125
13/64	0.203125	5.1594	29/64	0.453125	11.5094	45/64	0.703125	17.8594	61/64	0.953125	24.2094
7/32	0.218750	5.5562	15/32	0.468750	11.9063	23/32	0.718750	18.2562	31/32	0.968750	24.6063
15/64	0.234375	5.9531	31/64	0.484375	12.3031	47/64	0.734375	18.6531	63/64	0.984375	25.0031
1/4	0.250000	6.3500	1/2	0.500000	12.7000	3/4	0.750000	19.0500	1	1.000000	25.4000

Inches to decimal feet

Row: whole inches; column: extra fraction. 7 5/8 in = 0.6354 ft.

Inches	+0	+1/8	+1/4	+3/8	+1/2	+5/8	+3/4	+7/8
0	0.0000	0.0104	0.0208	0.0313	0.0417	0.0521	0.0625	0.0729
1	0.0833	0.0938	0.1042	0.1146	0.1250	0.1354	0.1458	0.1563
2	0.1667	0.1771	0.1875	0.1979	0.2083	0.2188	0.2292	0.2396
3	0.2500	0.2604	0.2708	0.2813	0.2917	0.3021	0.3125	0.3229
4	0.3333	0.3438	0.3542	0.3646	0.3750	0.3854	0.3958	0.4063
5	0.4167	0.4271	0.4375	0.4479	0.4583	0.4688	0.4792	0.4896
6	0.5000	0.5104	0.5208	0.5313	0.5417	0.5521	0.5625	0.5729
7	0.5833	0.5938	0.6042	0.6146	0.6250	0.6354	0.6458	0.6563
8	0.6667	0.6771	0.6875	0.6979	0.7083	0.7188	0.7292	0.7396
9	0.7500	0.7604	0.7708	0.7813	0.7917	0.8021	0.8125	0.8229
10	0.8333	0.8438	0.8542	0.8646	0.8750	0.8854	0.8958	0.9063
11	0.9167	0.9271	0.9375	0.9479	0.9583	0.9688	0.9792	0.9896

Decimal feet to inches (nearest 1/16)

Row: tenths of a foot; column: hundredths. 0.47 ft = 5 5/8 in.

Feet	0.00	0.01	0.02	0.03	0.04	0.05	0.06	0.07	0.08	0.09
0.0	0″	1/8″	1/4″	3/8″	1/2″	5/8″	3/4″	13/16″	15/16″	1 1/16″
0.1	1 3/16″	1 5/16″	1 7/16″	1 9/16″	1 11/16″	1 13/16″	1 15/16″	2 1/16″	2 3/16″	2 1/4″

Feet	0.00	0.01	0.02	0.03	0.04	0.05	0.06	0.07	0.08	0.09
0.2	2 3/8″	2 1/2″	2 5/8″	2 3/4″	2 7/8″	3″	3 1/8″	3 1/4″	3 3/8″	3 1/2″
0.3	3 5/8″	3 3/4″	3 13/16″	3 15/16″	4 1/16″	4 3/16″	4 5/16″	4 7/16″	4 9/16″	4 11/16″
0.4	4 13/16″	4 15/16″	5 1/16″	5 3/16″	5 1/4″	5 3/8″	5 1/2″	5 5/8″	5 3/4″	5 7/8″
0.5	6″	6 1/8″	6 1/4″	6 3/8″	6 1/2″	6 5/8″	6 3/4″	6 13/16″	6 15/16″	7 1/16″
0.6	7 3/16″	7 5/16″	7 7/16″	7 9/16″	7 11/16″	7 13/16″	7 15/16″	8 1/16″	8 3/16″	8 1/4″
0.7	8 3/8″	8 1/2″	8 5/8″	8 3/4″	8 7/8″	9″	9 1/8″	9 1/4″	9 3/8″	9 1/2″
0.8	9 5/8″	9 3/4″	9 13/16″	9 15/16″	10 1/16″	10 3/16″	10 5/16″	10 7/16″	10 9/16″	10 11/16″
0.9	10 13/16″	10 15/16″	11 1/16″	11 3/16″	11 1/4″	11 3/8″	11 1/2″	11 5/8″	11 3/4″	11 7/8″

Common fractions with other denominators

Fraction	Decimal	Percent
1/2	0.5	50%
1/3	0.333333	33.3333%
2/3	0.666667	66.6667%
1/4	0.25	25%
3/4	0.75	75%
1/5	0.2	20%
2/5	0.4	40%
3/5	0.6	60%
4/5	0.8	80%
1/6	0.166667	16.6667%
5/6	0.833333	83.3333%

Fraction	Decimal	Percent
1/7	0.142857	14.2857%
1/8	0.125	12.5%
1/9	0.111111	11.1111%
1/10	0.1	10%
1/12	0.083333	8.3333%
1/16	0.0625	6.25%
1/20	0.05	5%
1/25	0.04	4%
1/32	0.03125	3.125%
1/50	0.02	2%
1/100	0.01	1%

Sources and method

- **International Yard and Pound Agreement (1959)** — 1 in = 25.4 mm exactly

Every value is calculated exactly from the fraction; no values are typed in. Interactive version, corrections and more charts: **allunitconversions.com/fraction-to-decimal-chart**

Angle Conversion Chart

Degrees, radians, gradians, arcminutes and arcseconds, plus slope and roof pitch

For: Students, surveyors, roofers, engineers and programmers

allunitconversions.com/angle-conversion-chart
By Miguel Coelho · Edition 2.0
9 November 2026

EXACT DEFINITION	FORMULA	REVERSE	WORKED EXAMPLE
360° = 2π rad = 400 gon; 1° = 60′ = 3600″	rad = ° × π ÷ 180; slope % = tan(°) × 100	° = rad × 180 ÷ π; ° = arctan(slope % ÷ 100)	A 6/12 roof pitch = 26.57° = 50 % slope

Matrix values use 6 significant figures; slope angles to 2 decimal places.

Factor matrix — 1 unit in every other unit

1 unit =	°	rad	gon	′	″
1 °	1	0.0174533	1.11111	60	3,600
1 rad	57.2958	1	63.662	3,437.75	206,265
1 gon	0.9	0.015708	1	54	3,240
1 ′	0.0166667	2.90888×10^{-4}	0.0185185	1	60
1 ″	2.77778×10^{-4}	4.84814×10^{-6}	3.08642×10^{-4}	0.0166667	1

Common angles

Degrees (°)	Radians (exact)	Radians (rad)	Gradians (gon)
0	0	0.00000	0
15	π/12	0.26180	16.667
30	π/6	0.52360	33.333
45	π/4	0.78540	50
60	π/3	1.04720	66.667
90	π/2	1.57080	100
120	2π/3	2.09440	133.333
135	3π/4	2.35619	150
150	5π/6	2.61799	166.667

Degrees (°)	Radians (exact)	Radians (rad)	Gradians (gon)
180	π	3.14159	200
210	7π/6	3.66519	233.333
225	5π/4	3.92699	250
240	4π/3	4.18879	266.667
270	3π/2	4.71239	300
300	5π/3	5.23599	333.333
315	7π/4	5.49779	350
330	11π/6	5.75959	366.667
360	2π	6.28319	400

Slope percentage to angle (ramps, roads, drainage)

Slope % = rise ÷ run × 100. 8.33 % is a 1:12 wheelchair ramp.

Slope (%)	Angle (°)	Ratio (1 in …)
1	0.57	100.0
2	1.15	50.0
2.5	1.43	40.0
4	2.29	25.0
5	2.86	20.0
6	3.43	16.7
8	4.57	12.5
8.33	4.76	12.0
10	5.71	10.0
12	6.84	8.3

Slope (%)	Angle (°)	Ratio (1 in …)
15	8.53	6.7
20	11.31	5.0
25	14.04	4.0
30	16.70	3.3
33.3	18.42	3.0
40	21.80	2.5
50	26.57	2.0
60	30.96	1.7
75	36.87	1.3
100	45.00	1.0

Roof pitch (rise per 12 run) to angle

Pitch is the rise for every 12 units of run (6 = 6/12 pitch).

Pitch	Angle (°)	Slope (%)
1	4.76	8.3
2	9.46	16.7

Pitch	Angle (°)	Slope (%)
9	36.87	75.0
10	39.81	83.3

Pitch	Angle (°)	Slope (%)
17	54.78	141.7
18	56.31	150.0

Pitch	Angle (°)	Slope (%)	Pitch	Angle (°)	Slope (%)	Pitch	Angle (°)	Slope (%)
3	14.04	25.0	**11**	42.51	91.7	**19**	57.72	158.3
4	18.43	33.3	**12**	45.00	100.0	**20**	59.04	166.7
5	22.62	41.7	**13**	47.29	108.3	**21**	60.26	175.0
6	26.57	50.0	**14**	49.40	116.7	**22**	61.39	183.3
7	30.26	58.3	**15**	51.34	125.0	**23**	62.45	191.7
8	33.69	66.7	**16**	53.13	133.3	**24**	63.43	200.0

Sources and method

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

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/angle-conversion-chart**