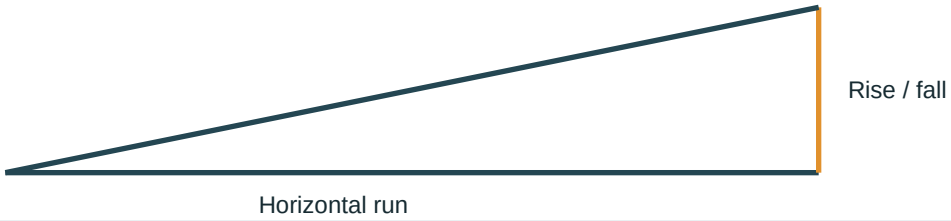
Chippy Tools

Construction maths, made simple.

Gradient conversion reference

Convert the magnitude of a slope between ratio, percentage and degrees. The same geometry applies to a rise or a fall.

Schematic, not to scale. Measure the run horizontally.



Ratio 1:X	Percent	Degrees	mm per metre
1:100	1.00%	0.57	10.0
1:80	1.25%	0.72	12.5
1:60	1.67%	0.95	16.7
1:40	2.50%	1.43	25.0
1:20	5.00%	2.86	50.0
1:14	7.14%	4.09	71.4
1:12	8.33%	4.76	83.3
1:10	10.00%	5.71	100.0

Convert any gradient

Percent = 100 / X. Degrees = arctan(1 / X), in degree mode.
Fall in mm = horizontal run in metres x 1000 / X.
From percent: X = 100 / percent. From degrees: X = 1 / tan(angle).

Worked example

A 3 m horizontal run at 1:60 gives 3 x 1000 / 60 = **50 mm fall**. A level surface is 0% and 0 degrees; it has no finite 1:X ratio.

Job / source for required slope	Required slope (write ratio, % or degrees)
Horizontal run (m)	Calculated rise or fall (mm)

These are mathematical equivalents, not permitted drainage or accessibility gradients. Confirm the relevant rule before selecting a slope.

Worked guide: chippy.tools/building-codes/concrete/fall-and-gradient-conversion/

Scan for the guide