Model Gauges.

There is a difference between gauge and scale. The gauge is the distance between the rails, from inside one rail to the inside of the other rail, with trains and rolling stock built for each particular gauge. Scale is the proportion that the size of the model is compared to its real-world equivalent. The scale is normally expressed as a ratio (1:16 or 1/16) or a size (1 inch :1 foot).

When a model train is scaled down the gauge is not necessarily to scale, but to the nearest standard gauge. This means that you could have two different trains, both with the same gauge, but a slightly different scale. In practice, this will be hardly noticeable, but it is worth bearing mind.

Name	Scale	Description
Z	1:22 scale	Based on Marklin factory standards
N	2mm = 1ft 1:148 scale 9mm gauge	Twice as small as OO gauge
TT	3mm = 1ft 1:101.6 12mm gauge	This gauge originated in the USA, and was also produced at 2.5mm to 1ft, 1:120 scale. Enthusiasts using this scale need specialist support through the Three Millimetre Society.
HO	3.5mm = 1ft 1:87 16.5mm gauge	This is the major gauge used outside the UK. At 3.5mm to 1ft, the track gauge at 16.5mm is virtually exact to scale for the standard gauge. When using this gauge it must not be confused with 00 gauge, HO gauge is almost 15% smaller. One can run HO gauge rolling stock on 00 gauge layouts, the track gauges both being 16.5mm, but the difference in scale will immediately become very obvious.
OO3n	4mm = 1ft 1:76 12mm gauge	Used for models of the Isle of Man railways and the Irish 3ft gauge systems
OO	4mm = 1ft 1:76 16.5mm gauge	This is the most popular scale for British modellers and is probably the best supported in the industry with a wide range of ready-to-run models, kits and accessories.
OO9	4mm = 1ft 1:76 9.00mm gauge	The most popular narrow gauge scale as this allows for the use of N gauge chassis and most 4mm accessories. Track and turnouts are available from a wide range of manufacturers.
EM	4mm = 1ft 1:76 18.2 gauge	This scale is an attempt to make the 00 layout track gauge more realistic. At 18.2mm it still falls short of the ideal 18.83mm, but was felt by those involved to be near enough.
P4/S4	4mm = 1ft 1:76 18.83mm gauge	As EM is still slightly under scale, P4 was established. Locomotive and rolling stock kits are available to fit this gauge.
O	7mm = 1ft 1:43.5 32mm gauge	This scale has become more popular due to the availability of a large range of quality locomotive and rolling stock kits. Technically the inside track width of 32mm is 3% under scale.
I	10mm = 1ft 1:32 45mm gauge	This scale is mainly used outside for electric and live steam operation.
G	13.55 = 1ft 1:22.5 45mm gauge	G is generally used for garden railways of narrow gauge prototypes, and uses the same track gauge as 1 gauge,. The scale ranges approximately from $^{1}/_{19}$ to $^{1}/_{29}$, according to the size and gauge of the prototype.

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Re-size chart

How to resize scale models using either a copier or printer. Use this table to give the appropriate enlarge or reduce to re scale the drawing.

	G Scale	O Scale	S Scale	OO Scale	HO Scale	TT Scale	N Scale	Z Scale
G Scale		213%	284%	339%	386%	533%	711%	977%
O Scale	47%		133%	158%	181%	250%	333%	458%
S Scale	35%	75%		119%	136%	188%	250%	344%
OO Scale	30%	63%	84%		115%	158%	211%	289%
HO Scale	26%	55%	73%	87%		138%	184%	253%
TT Scale	19%	40%	53%	63%	73%		133%	183%
N Scale	14%	30%	40%	48%	54%	75%		138%
Z Scale	10%	22%	29%	35%	40%	55%	73%	

Find your scale in the table along the top, then scroll down to the desired scale and find out the factor you need to enlarge or reduce. So, if, say, I have HO scale plans I want to enlarge to O scale, I run across the top to HO, then down to O scale, and see that I need to enlarge the plans to 181%. If I have O scale plans I want to reduce to S scale, I run across the top to O and down to S, and see I need to reduce the plans to 75%.

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