Stair Rise and Run Chart

Total rise 12 to 120 in: risers, riser height, treads, total run, angle and stringer line

Total rise	Risers	Riser height	Treads	Total run	Angle	Stringer line
12 in (1' 0")	2	6.000 in (6")	1	0' 10"	31.0°	1' 3 5/8"
18 in (1' 6")	3	6.000 in (6")	2	1' 8"	31.0°	2' 2 15/16"
24 in (2' 0")	4	6.000 in (6")	3	2' 6"	31.0°	3' 2 7/16"
30 in (2' 6")	4	7.500 in (7 1/2")	3	2' 6"	36.9°	3' 6 7/16"
36 in (3' 0")	5	7.200 in (7 3/16")	4	3' 4"	35.8°	4' 5 13/16"
42 in (3' 6")	6	7.000 in (7")	5	4' 2"	35.0°	5' 5 5/16"
48 in (4' 0")	7	6.857 in (6 7/8")	6	5' 0"	34.4°	6' 4 13/16"
54 in (4' 6")	7	7.714 in (7 11/16")	6	5' 0"	37.6°	6' 8 3/4"
60 in (5' 0")	8	7.500 in (7 1/2")	7	5' 10"	36.9°	7' 8 3/16"
66 in (5' 6")	9	7.333 in (7 5/16")	8	6' 8"	36.3°	8' 7 11/16"
72 in (6' 0")	10	7.200 in (7 3/16")	9	7' 6"	35.8°	9' 7 1/4"
78 in (6' 6")	11	7.091 in (7 1/16")	10	8' 4"	35.3°	10' 6 13/16"
84 in (7' 0")	11	7.636 in (7 5/8")	10	8' 4"	37.4°	10' 10 5/8"
90 in (7' 6")	12	7.500 in (7 1/2")	11	9' 2"	36.9°	11' 10 1/8"
96 in (8' 0")	13	7.385 in (7 3/8")	12	10' 0"	36.4°	12' 9 11/16"
102 in (8' 6")	14	7.286 in (7 5/16")	13	10' 10"	36.1°	13' 9 1/4"
108 in (9' 0")	14	7.714 in (7 11/16")	13	10' 10"	37.6°	14' 1"
114 in (9' 6")	15	7.600 in (7 5/8")	14	11' 8"	37.2°	15' 0 9/16"
120 in (10' 0")	16	7.500 in (7 1/2")	15	12' 6"	36.9°	16' 0 1/16"

Stair angle in degrees: atan(riser / tread)

Riser height	9" tread	10" tread	10 1/2" tread	11" tread	12" tread
6" riser	33.7°	31.0°	29.7°	28.6°	26.6°
6 1/2" riser	35.8°	33.0°	31.8°	30.6°	28.4°
7" riser	37.9°	35.0°	33.7°	32.5°	30.3°
7 1/4" riser	38.9°	35.9°	34.6°	33.4°	31.1°
7 1/2" riser	39.8°	36.9°	35.5°	34.3°	32.0°
7 3/4" riser	40.7°	37.8°	36.4°	35.2°	32.9°

Counts use a 7 3/4 in maximum riser and a 10 in tread. Treads = risers - 1 when the upper floor or deck is the last surface.
Total run = treads x tread. Stringer line = sqrt(total rise^2 + total run^2), along the nosings; the board must be longer.
Rise is finished floor to finished floor: add flooring and tread thickness first. Use the exact riser height to lay out.
7 3/4 in and 10 in are the 2021 IRC residential reference (R311.7.5). Local code, commercial stairs and other countries differ.
Values are geometric. Check your drawings and your local code before cutting.