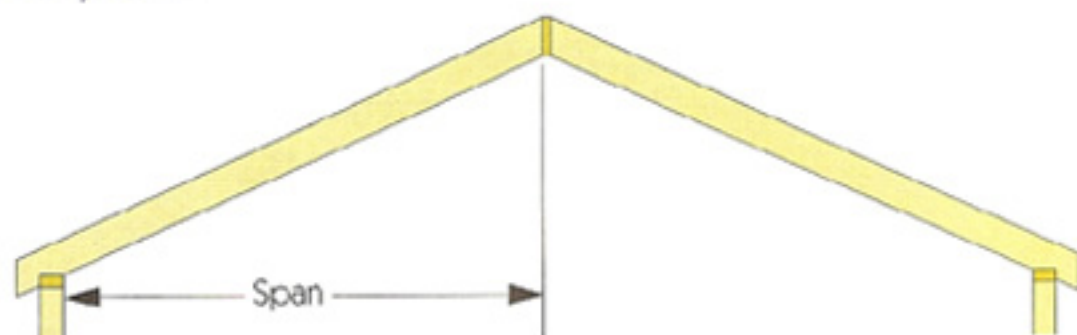


Rafters



Rafters: No Attic, 40 PSF Live, 10 PSF Dead

Maximum Allowable Span (feet-inches)

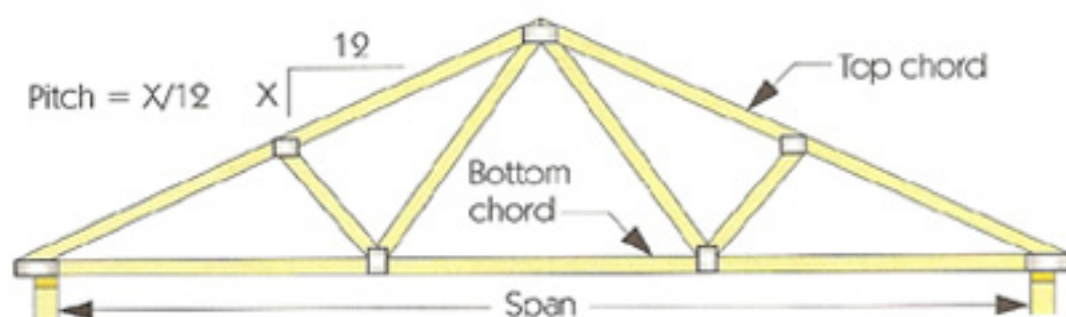
Species Group	Spacing in.,oc	2 x 6		2 x 8			2 x 10		
		Sel Str	No.1 No.2	Sel Str	No.1 No.2	Sel Str	No.1 No.2		
Douglas fir-larch	12	13-0	12-6 12-3	17-2	16-6 15-10	21-10	20-4 19-4		
	16	11-10	11-5 10-10	15-7	14-5 13-8	19-10	17-8 16-9		
	24	10-4	9-4 8-10	13-7	11-9 11-2	17-4	14-5 13-8		
Hem-fir	12	12-3	12-0 11-5	16-2	15-10 15-1	20-8	19-10 18-9		
	16	11-2	10-11 10-5	14-8	14-1 13-4	18-9	17-2 16-3		
	24	9-9	9-1 8-7	12-10	11-6 1-010	16-5	14-0 13-3		

Rafters are similar to joists, except the live loads they carry are more likely to be accumulations of snow, rather than furnishings and people.

As with floor joists, the building codes reference span tables for roof rafters. The example partial table at left lists the maximum allowed clear span for repetitive rafters spaced 12", 16", and 24" on-center, based on wood species and grade.

It is important to note that snow loads in mountainous areas are subject to extreme variation. Regardless of where you live, consult your building code official or local structural engineer for your snow load.

Trusses



Fink Truss: 24" Spacing, 30 PSF Live, 7 PSF Dead

Species Group	Grade	3/12 Slope				5/12 Slope			
		Top Chord		Bottom Chord		Top Chord		Bottom Chord	
		2 x 4	2 x 6	2 x 4	2 x 6	2 x 4	2 x 6	2 x 4	2 x 6
Douglas fir-larch	Sel. Str.	28-2	41-10	33-2	41-10	32-8	43-2	33-2	43-2
	#1	25-8	38-1	27-5	39-1	29-8	43-2	28-3	40-3
	#2	24-6	36-4	24-10	35-1	28-5	41-10	25-7	38-8
Hem-fir	Sel. Str.	26-11	39-9	30-9	39-9	30-0	39-9	30-9	39-9
	#1	24-9	36-7	25-10	36-5	28-9	39-9	26-10	37-11
	#2	23-8	34-10	23-0	32-5	27-5	39-9	24-5	35-2

A triangle is the only construction that, by its geometry, is perfectly rigid. If a great weight were placed on the peak of the truss at left, the only forces in the truss would be compression in the top chords (rafters) and tension in the bottom chord (ceiling joist). Since lumber has high strength in both compression and tension, the truss could span great distances using only 2x4s for its chords.

Roof loads are not concentrated at the peak, but are spread across the rafters. By breaking the truss into a number of smaller triangles, however, the spans of the rafter segments are reduced.

Compare the allowable spans in the table at left to those in the rafter table above.