

MAXIMUM SPANS FOR FLOOR JOISTS

General Design Information

The publication entitled Span Tables for Joists and Rafters, available from the National Forest Products Association, provides information suitable for design of residential construction. The information on roof design in that book is also suitable for roofs of other types of building occupancy. For floor construction where live loading is heavier than customarily found in residential occupancies, tabular data are provided herein.

The tabulated spans are based on bending strength using the live load indicated in each table heading plus a dead load of 10 pounds per square foot. In calculating the required modulus of elasticity for the tabulated span, the live load only was used since this is in accordance with established practice for design of floor joists.

Span

While the effective span length for an isolated beam is customarily taken as the distance from face to face of supports plus one-half the required length of bearing at each end, it is the practice in designing joists spaced not over 24 inches apart to consider the span as the clear distance between supports.

Net Sizes of Lumber

Joists are customarily specified in terms of nominal sizes but calculations to determine the allowable span and required modulus of elasticity are based on dressed sizes (see pages 25-27).

Design Stresses

Unit design values for design of wood joists are given in the National Design Specification for Wood Construction, available from the National Forest Products Association.

Adjustment of Modulus of Elasticity

The modulus of elasticity values listed in the span tables for joists are those required for the tabulated spans if deflection under the live load is limited to $\ell/360$. Where other deflection limits are acceptable, the tabular E values may be adjusted by multiplying them by the following factors:

- For limit of $\ell/300$ ----- 0.833
- For limit of $\ell/240$ ----- 0.667
- For limit of $\ell/180$ ----- 0.500

MAXIMUM SPANS— FLOOR JOISTS— 50 psf LIVE LOAD

See instructions for use of tables on page 231.
 Symbols used in the tables are as follows:

- F_b = Unit design stress at extreme fiber in bending, psi.
- L = Clear distance between supports, feet.
- E = Minimum required modulus of elasticity, 1000 psi, if deflection under the live load is limited to $\ell/360$.

Joist sizes are expressed as nominal but calculations are based on dressed sizes (see pages 25-27).

Size of Joist	Spacing C. to C.		F_b									
			900	1000	1100	1200	1300	1400	1500	1600	1800	2000
2 x 6	12	L	8'8"	9'2"	9'7"	10'0"	10'5"	10'10"	11'3"	11'7"	12'3"	12'11"
		E	1063	1246	1437	1637	1846	2063	2289	2521	3007	3522
	16	L	7'6"	7'11"	8'4"	8'8"	9'1"	9'5"	9'9"	10'0"	10'7"	11'2"
		E	924	1083	1249	1423	1605	1794	1989	2191	2614	3062
	24	L	6'1"	6'5"	6'9"	7'1"	7'4"	7'7"	7'11"	8'2"	8'7"	9'1"
		E	744	871	1005	1144	1291	1443	1600	1762	2103	2463
2 x 8	12	L	11'5"	12'1"	12'7"	13'3"	13'9"	14'3"	14'9"	15'3"	16'2"	17'1"
		E	1063	1246	1437	1631	1846	2063	2289	2521	3007	3522
	16	L	9'11"	10'5"	11'0"	11'6"	11'11"	12'5"	12'10"	13'3"	14'0"	14'10"
		E	924	1083	1249	1423	1605	1794	1989	2191	2614	3062
	24	L	8'1"	8'6"	8'11"	9'4"	9'8"	10'1"	10'5"	10'9"	11'5"	12'0"
		E	744	871	1005	1144	1291	1443	1600	1762	2103	2463
2 x 10	12	L	14'7"	15'5"	16'2"	16'10"	17'6"	18'2"	18'10"	19'5"	20'7"	21'9"
		E	1063	1246	1437	1637	1846	2063	2289	2521	3007	3522
	16	L	12'7"	13'4"	14'0"	14'7"	15'3"	15'10"	16'4"	16'10"	17'11"	18'11"
		E	924	1083	1249	1423	1605	1794	1989	2191	2614	3062
	24	L	10'3"	10'10"	11'4"	11'10"	12'4"	12'10"	13'3"	13'9"	14'7"	15'4"
		E	744	871	1005	1144	1291	1443	1600	1762	2103	2463
2 x 12	12	L	17'9"	18'9"	19'7"	20'6"	21'4"	22'2"	22'11"	23'8"	25'1"	26'6"
		E	1063	1246	1437	1637	1846	2063	2289	2521	3007	3522
	16	L	15'5"	16'3"	17'1"	17'10"	18'6"	19'2"	19'10"	20'6"	21'9"	23'0"
		E	924	1083	1249	1423	1605	1794	1989	2191	2614	3062
	24	L	12'6"	13'2"	13'10"	14'5"	15'0"	15'7"	16'2"	16'7"	17'8"	18'10"
		E	744	871	1005	1144	1291	1443	1600	1762	2103	2463
2 x 14	12	L	20'11"	22'1"	23'2"	24'2"	25'2"	26'1"	27'0"	27'11"	29'7"	31'2"
		E	1063	1246	1437	1637	1846	2063	2289	2521	3007	3522
	16	L	18'2"	19'2"	20'1"	20'11"	21'9"	22'7"	23'5"	24'2"	25'7"	27'0"
		E	924	1083	1249	1423	1605	1794	1989	2191	2614	3062
	24	L	14'9"	15'6"	16'3"	17'0"	17'8"	18'4"	19'0"	19'7"	20'10"	22'0"
		E	744	871	1005	1144	1291	1443	1600	1762	2103	2463
3 x 6	12	L	11'2"	11'10"	12'5"	12'11"	13'6"	14'0"	14'6"	14'11"	15'10"	16'9"
		E	1373	1608	1855	2113	2383	2663	2953	3254	3882	4547
	16	L	9'9"	10'3"	10'9"	11'3"	11'8"	12'2"	12'7"	12'11"	13'9"	14'6"
		E	1193	1397	1612	1836	2071	2314	2567	2827	3374	3952
	24	L	7'11"	8'4"	8'9"	9'2"	9'6"	9'10"	10'2"	10'6"	11'2"	11'9"
		E	960	1124	1297	1478	1666	1862	2065	2275	2714	3179
3 x 8	12	L	14'9"	15'7"	16'4"	17'1"	17'9"	18'5"	19'1"	19'9"	20'11"	22'1"
		E	1373	1608	1855	2113	2383	2663	2953	3254	3882	4547
	16	L	12'10"	13'6"	14'2"	14'10"	15'5"	16'0"	16'7"	17'1"	18'1"	19'1"
		E	1193	1397	1612	1836	2071	2314	2567	2827	3374	3952
	24	L	10'5"	11'0"	11'6"	12'0"	12'6"	13'0"	13'5"	13'10"	14'8"	15'6"
		E	960	1124	1297	1478	1666	1862	2065	2275	2714	3179
3 x 10	12	L	18'10"	19'10"	20'10"	21'9"	22'7"	23'6"	24'4"	25'1"	26'7"	28'1"
		E	1373	1608	1855	2113	2383	2663	2953	3254	3882	4547
	16	L	16'4"	17'3"	18'1"	18'10"	19'7"	20'5"	21'1"	21'10"	23'2"	24'5"
		E	1193	1397	1612	1836	2071	2314	2567	2827	3374	3952
	24	L	13'3"	14'0"	14'8"	15'4"	16'0"	16'7"	17'2"	17'8"	18'9"	19'10"
		E	960	1124	1297	1478	1666	1862	2065	2275	2714	3179
3 x 12	12	L	22'11"	24'2"	25'4"	26'5"	27'6"	28'7"	29'7"	30'7"	32'5"	34'2"
		E	1373	1608	1855	2113	2383	2663	2953	3254	3882	4547
	16	L	19'11"	20'11"	21'11"	22'11"	23'11"	24'10"	25'8"	26'6"	28'1"	29'7"
		E	1193	1397	1612	1836	2071	2314	2567	2827	3374	3952
	24	L	16'2"	17'0"	17'10"	18'8"	19'5"	20'2"	20'10"	21'6"	22'10"	24'1"
		E	960	1124	1297	1478	1666	1862	2065	2275	2714	3179
3 x 14	12	L	27'0"	28'5"	29'10"	31'2"	32'5"	33'8"	34'10"	36'0"	38'2"	40'3"
		E	1373	1608	1855	2113	2383	2663	2953	3254	3882	4547
	16	L	23'5"	24'8"	25'11"	27'1"	28'2"	29'3"	30'3"	31'3"	33'1"	34'11"
		E	1193	1397	1612	1836	2071	2314	2567	2827	3374	3952
	24	L	19'0"	20'0"	21'0"	22'0"	22'11"	23'9"	24'7"	25'5"	26'11"	28'4"
		E	960	1124	1297	1478	1666	1862	2065	2275	2714	3179

MAXIMUM SPANS— FLOOR JOISTS— 60 psf LIVE LOAD

See instructions for use of tables on page 231.

Symbols used in the tables are as follows:

F_b = Unit design stress at extreme fiber in bending, psi.

L = Clear distance between supports, feet.

E = Minimum required modulus of elasticity, 1000 psi, if deflection under the live load is limited to $\ell/360$.

Joist sizes are expressed as nominal but calculations are based on dressed sizes (see pages 25-27).

Size of Joist	Spacing C. to C.		F_b									
			900	1000	1100	1200	1300	1400	1500	1600	1800	2000
2 x 6	12	L	8'1"	8'6"	8'11"	9'3"	9'8"	10'0"	10'5"	10'9"	11'5"	12'0"
		E	1012	1186	1368	1558	1757	1964	2179	2400	2863	3353
	16	L	7'0"	7'4"	7'9"	8'1"	8'5"	8'8"	9'0"	9'4"	9'10"	10'5"
		E	880	1031	1189	1355	1528	1708	1894	2191	2489	2915
	24	L	5'8"	6'0"	6'4"	6'7"	6'10"	7'1"	7'4"	7'7"	8'0"	8'5"
		E	708	829	957	1089	1229	1374	1523	1677	2002	2345
2 x 8	12	L	10'7"	11'2"	11'9"	12'3"	12'9"	13'3"	13'8"	14'1"	15'0"	15'10"
		E	1012	1186	1368	1558	1757	1964	2179	2400	2863	3353
	16	L	9'2"	9'8"	10'2"	10'7"	11'0"	11'5"	11'10"	12'3"	13'0"	13'8"
		E	880	1031	1189	1355	1528	1708	1894	2191	2489	2915
	24	L	7'6"	7'11"	8'3"	8'7"	9'0"	9'4"	9'7"	9'11"	10'7"	11'2"
		E	708	829	957	1089	1229	1374	1523	1677	2002	2345
2 x 10	12	L	13'6"	14'3"	14'11"	15'7"	16'3"	16'10"	17'5"	18'0"	19'1"	20'2"
		E	1012	1186	1368	1558	1757	1964	2179	2400	2863	3353
	16	L	11'9"	12'3"	13'0"	13'6"	14'0"	14'6"	15'1"	15'7"	16'7"	17'6"
		E	880	1031	1189	1355	1528	1708	1894	2191	2489	2915
	24	L	9'6"	10'0"	10'6"	11'0"	11'6"	11'11"	12'4"	12'9"	13'6"	14'3"
		E	708	829	957	1089	1229	1374	1523	1677	2002	2345
2 x 12	12	L	16'6"	17'4"	18'2"	19'0"	19'9"	20'6"	21'3"	21'11"	23'3"	24'6"
		E	1012	1186	1368	1558	1757	1964	2179	2400	2863	3353
	16	L	14'3"	15'0"	15'9"	16'6"	17'2"	17'10"	18'5"	19'0"	20'2"	21'3"
		E	880	1031	1189	1355	1528	1708	1894	2191	2489	2915
	24	L	11'7"	12'3"	12'10"	13'5"	13'11"	14'5"	14'11"	15'5"	16'5"	17'5"
		E	708	829	957	1089	1229	1374	1523	1677	2002	2345
2 x 14	12	L	19'5"	20'5"	21'5"	22'4"	23'3"	24'2"	25'0"	25'10"	27'5"	28'11"
		E	1012	1186	1368	1558	1757	1964	2179	2400	2863	3353
	16	L	16'10"	17'8"	18'6"	19'4"	20'2"	20'11"	21'8"	22'5"	23'9"	25'1"
		E	880	1031	1189	1355	1528	1708	1894	2191	2489	2915
	24	L	13'8"	14'5"	15'1"	15'9"	16'5"	17'0"	17'7"	18'2"	19'3"	20'4"
		E	708	829	957	1089	1229	1374	1523	1677	2002	2345
3 x 6	12	L	10'4"	10'11"	11'6"	12'0"	12'6"	13'0"	13'5"	13'10"	14'8"	15'6"
		E	1307	1531	1766	2012	2269	2535	2811	3098	3696	4329
	16	L	9'0"	9'6"	10'0"	10'5"	10'10"	11'3"	11'8"	12'0"	12'9"	13'5"
		E	1136	1330	1535	1748	1972	2203	2444	2691	3212	3762
	24	L	7'4"	7'9"	8'1"	8'5"	8'9"	9'1"	9'5"	9'9"	10'4"	10'11"
		E	914	1070	1235	1406	1586	1773	1966	2166	2584	3026
3 x 8	12	L	13'8"	14'5"	15'2"	15'10"	16'6"	17'1"	17'8"	18'3"	19'4"	20'5"
		E	1307	1531	1766	2012	2269	2535	2811	3098	3696	4329
	16	L	11'10"	12'6"	13'1"	13'8"	14'3"	14'10"	15'4"	15'10"	16'9"	17'8"
		E	1136	1330	1535	1748	1972	2203	2444	2691	3212	3762
	24	L	9'7"	10'1"	10'7"	11'1"	11'7"	12'0"	12'5"	12'10"	13'7"	14'4"
		E	914	1070	1235	1406	1586	1773	1966	2166	2584	3026
3 x 10	12	L	17'5"	18'5"	19'4"	20'2"	21'0"	21'9"	22'7"	23'4"	24'9"	26'1"
		E	1307	1531	1766	2012	2269	2535	2811	3098	3696	4329
	16	L	15'2"	16'0"	16'9"	17'6"	18'2"	18'10"	19'6"	20'2"	21'5"	22'7"
		E	1136	1330	1535	1748	1972	2203	2444	2691	3212	3762
	24	L	12'4"	13'0"	13'7"	14'2"	14'9"	15'4"	15'10"	16'4"	17'5"	18'4"
		E	914	1070	1235	1406	1586	1773	1966	2166	2584	3026
3 x 12	12	L	21'3"	22'4"	23'5"	24'6"	25'6"	26'6"	27'5"	28'4"	30'0"	31'7"
		E	1307	1531	1766	2012	2269	2535	2811	3098	3696	4329
	16	L	18'5"	19'5"	20'4"	21'3"	22'2"	23'0"	23'9"	24'6"	26'0"	27'5"
		E	1136	1330	1535	1748	1972	2203	2444	2691	3212	3762
	24	L	15'0"	15'9"	16'6"	17'3"	18'0"	18'8"	19'4"	20'0"	21'2"	22'4"
		E	914	1070	1235	1406	1586	1773	1966	2166	2584	3036
3 x 14	12	L	25'0"	26'4"	27'7"	28'10"	30'1"	31'3"	32'4"	33'4"	35'4"	37'4"
		E	1307	1531	1766	2012	2269	2535	2811	3098	3696	4329
	16	L	21'8"	22'10"	24'0"	25'1"	26'1"	27'1"	28'0"	28'11"	30'8"	32'4"
		E	1136	1330	1535	1748	1972	2203	2444	2691	3212	3762
	24	L	17'7"	18'7"	19'6"	20'4"	21'2"	22'0"	22'9"	23'6"	24'11"	26'3"
		E	914	1070	1235	1406	1586	1773	1966	2166	2584	3026

MAXIMUM SPANS—FLOOR JOISTS— 70 psf LIVE LOAD

See instructions for use of tables on page 231.

Symbols used in the tables are as follows:

F_b = Unit design stress at extreme fiber in bending, psi.

L = Clear distance between supports, feet.

E = Minimum required modulus of elasticity, 1000 psi, if deflection under the live load is limited to $\ell/360$.

Joist sizes are expressed as nominal but calculations are based on dressed sizes (see pages 25-27).

Size of Joist	Spacing C. to C.		F_b									
			900	1000	1100	1200	1300	1400	1500	1600	1800	2000
2 x 10	12	L	12'8"	13'4"	14'0"	14'7"	15'2"	15'9"	16'4"	16'10"	17'11"	18'10"
		E	963	1133	1306	1488	1678	1875	2081	2292	2733	3201
	16	L	11'1"	11'7"	12'1"	12'7"	13'2"	13'8"	14'2"	14'7"	15'6"	16'4"
		E	840	984	1135	1294	1459	1631	1808	1992	2376	2783
	24	L	8'11"	9'5"	9'10"	10'3"	10'8"	11'1"	11'6"	11'11"	12'7"	13'3"
		E	676	792	914	1040	1174	1312	1454	1602	1912	2239
2 x 12	12	L	15'5"	16'3"	17'0"	17'9"	18'6"	19'2"	19'10"	20'6"	21'9"	22'11"
		E	963	1133	1306	1488	1678	1875	2081	2292	2733	3201
	16	L	13'4"	14'1"	14'9"	15'5"	16'0"	16'7"	17'3"	17'10"	18'10"	19'11"
		E	840	984	1135	1294	1459	1631	1808	1992	2376	2783
	24	L	10'10"	11'5"	12'0"	12'6"	13'0"	13'6"	14'0"	14'5"	15'4"	16'4"
		E	676	792	914	1040	1174	1312	1454	1602	1912	2239
2 x 14	12	L	18'2"	19'1"	20'0"	20'11"	21'9"	22'7"	23'5"	24'2"	25'7"	27'0"
		E	963	1133	1306	1488	1678	1875	2081	2292	2733	3201
	16	L	15'9"	16'7"	17'5"	18'2"	18'11"	19'7"	20'3"	20'11"	22'3"	23'5"
		E	840	984	1135	1294	1459	1631	1808	1992	2376	2783
	24	L	12'9"	13'6"	14'2"	14'9"	15'4"	15'11"	16'6"	17'0"	18'01"	19'01"
		E	676	792	914	1040	1174	1312	1454	1602	1912	2239
3 x 8	12	L	12'10"	13'6"	14'2"	14'9"	15'4"	15'11"	16'6"	17'1"	18'1"	19'1"
		E	1248	1462	1686	1921	2166	2421	2684	2958	3529	4133
	16	L	11'1"	11'8"	12'3"	12'10"	13'4"	13'10"	14'4"	14'10"	15'8"	16'7"
		E	1084	1270	1465	1669	1883	2103	2333	2570	3067	3592
	24	L	9'0"	9'6"	10'0"	10'5"	10'10"	11'3"	11'8"	12'0"	12'9"	13'5"
		E	873	1022	1179	1344	1514	1693	1877	2068	2467	2900
3 x 10	12	L	16'4"	17'3"	18'1"	18'10"	19'7"	20'4"	21'1"	21'9"	23'1"	24'4"
		E	1248	1462	1686	1921	2166	2421	2684	2958	3529	4133
	16	L	14'2"	14'11"	15'8"	16'4"	17'0"	17'8"	18'3"	18'11"	20'1"	21'1"
		E	1084	1270	1465	1669	1883	2103	2333	2570	3067	3592
	24	L	11'6"	12'2"	12'9"	13'3"	13'10"	14'4"	14'10"	15'4"	16'3"	17'2"
		E	873	1022	1179	1344	1514	1693	1877	2068	2467	2900
3 x 12	12	L	19'11"	20'11"	21'11"	22'11"	23'10"	24'9"	25'8"	26'6"	28'1"	29'7"
		E	1248	1462	1686	1921	2166	2421	2684	2958	3529	4133
	16	L	17'3"	18'2"	19'1"	19'11"	20'9"	21'6"	22'3"	23'0"	24'4"	25'8"
		E	1084	1270	1465	1669	1883	2103	2333	2570	3067	3592
	24	L	14'0"	14'9"	15'6"	16'2"	16'10"	17'6"	18'1"	18'7"	19'9"	20'10"
		E	873	1022	1179	1344	1514	1693	1877	2068	2467	2900
3 x 14	12	L	23'4"	24'7"	25'10"	27'0"	28'1"	29'2"	30'2"	31'2"	33'1"	34'11"
		E	1248	1462	1686	1921	2166	2421	2684	2958	3529	4133
	16	L	20'3"	21'4"	22'5"	23'5"	24'5"	25'4"	26'2"	27'0"	28'8"	30'3"
		E	1084	1270	1465	1669	1883	2103	2333	2570	3067	3592
	24	L	16'6"	17'4"	18'7"	19'0"	19'9"	20'6"	21'3"	22'0"	23'4"	24'7"
		E	873	1022	1179	1344	1514	1693	1877	2068	2467	2900
4 x 8	12	L	15'2"	16'0"	16'10"	17'7"	18'3"	18'11"	19'7"	20'3"	21'6"	22'7"
		E	1490	1745	2015	2295	2588	2891	3207	3533	4217	4939
	16	L	13'2"	13'11"	14'7"	15'3"	15'11"	16'6"	17'1"	17'7"	18'7"	19'7"
		E	1300	1533	1757	2002	2257	2522	2799	3082	3676	4306
	24	L	10'9"	11'4"	11'11"	12'5"	12'11"	13'5"	13'11"	14'4"	15'2"	16'0"
		E	1054	1234	1425	1625	1831	2046	2268	2500	2922	3492
4 x 10	12	L	19'5"	20'5"	21'5"	22'5"	22'4"	24'2"	25'0"	25'10"	27'5"	28'9"
		E	1490	1745	2015	2295	2588	2891	3207	3533	4217	4939
	16	L	16'10"	17'9"	18'7"	19'5"	20'3"	21'0"	21'9"	22'5"	23'10"	25'1"
		E	1300	1533	1757	2002	2257	2522	2799	3082	3676	4306
	24	L	13'8"	14'5"	15'2"	15'10"	16'6"	17'1"	17'8"	18'3"	19'3"	20'5"
		E	1054	1234	1425	1625	1831	2046	2268	2500	2922	3492
4 x 12	12	L	23'7"	24'10"	26'1"	27'3"	28'4"	29'5"	30'5"	31'5"	33'4"	35'2"
		E	1490	1745	2015	2295	2588	2891	3207	3533	4217	4939
	16	L	20'6"	21'7"	22'7"	23'7"	24'7"	25'6"	26'5"	27'4"	28'5"	30'6"
		E	1300	1533	1757	2002	2257	2522	2799	3082	3676	4306
	24	L	16'8"	17'7"	18'5"	19'3"	20'1"	20'10"	21'6"	22'2"	23'6"	24'10"
		E	1054	1234	1425	1625	1831	2046	2268	2500	2922	3492

MAXIMUM SPANS – FLOOR JOISTS – 80 psf LIVE LOAD

See instructions for use of tables on page 231.
 Symbols used in the tables are as follows:

- F_b = Unit design stress at extreme fiber in bending, psi.
- L = Clear distance between supports, feet.
- E = Minimum required modulus of elasticity, 1000 psi, if deflection under the live load is limited to $l/360$.

Joist sizes are expressed as nominal but calculations are based on dressed sizes (see pages 25-27).

Size of Joist	Spacing C. to C.		F_b									
			900	1000	1100	1200	1300	1400	1500	1600	1800	2000
2 x 10	12	L	11'11"	12'7"	13'2"	13'9"	14'4"	14'11"	15'5"	15'11"	16'10"	17'9"
		E	926	1084	1250	1423	1604	1795	1988	2191	2617	3062
	16	L	10'4"	10'11"	11'5"	11'11"	12'5"	12'11"	13'4"	13'9"	14'7"	15'5"
		E	803	941	1086	1236	1395	1561	1730	1903	2273	2662
	24	L	8'5"	8'10"	9'3"	9'8"	10'1"	10'6"	10'10"	11'2"	11'10"	12'6"
		E	646	758	873	995	1124	1254	1390	1533	1829	2143
2 x 12	12	L	14'6"	15'4"	16'1"	16'9"	17'5"	18'1"	18'9"	19'4"	20'6"	21'7"
		E	926	1084	1250	1423	1604	1795	1988	2191	2617	3062
	16	L	12'7"	11'3"	13'11"	14'6"	15'1"	15'8"	16'3"	16'9"	17'9"	18'9"
		E	803	941	1086	1236	1395	1561	1730	1903	2273	2662
	24	L	10'3"	10'9"	11'3"	11'9"	12'3"	12'9"	13'2"	13'7"	14'5"	15'5"
		E	646	758	873	995	1124	1254	1390	1533	1829	2143
2 x 14	12	L	17'1"	18'0"	18'10"	19'8"	20'6"	21'4"	22'1"	22'9"	24'2"	25'5"
		E	926	1084	1250	1423	1604	1795	1988	2191	2617	3062
	16	L	14'10"	15'7"	16'4"	17'1"	17'10"	18'6"	19'2"	19'9"	20'11"	22'1"
		E	803	941	1086	1236	1395	1561	1730	1903	2273	2662
	24	L	12'0"	12'8"	13'4"	13'11"	14'5"	15'0"	15'6"	16'0"	17'0"	18'0"
		E	646	758	873	995	1124	1254	1390	1533	1829	2143
3 x 8	12	L	12'0"	12'8"	13'4"	13'11"	14'6"	15'1"	15'7"	16'1"	17'1"	18'0"
		E	1195	1399	1614	1838	2073	2317	2569	2831	3377	3956
	16	L	10'6"	11'0"	11'7"	12'1"	12'7"	13'1"	13'6"	13'11"	14'9"	15'7"
		E	1038	1215	1402	1597	1802	2013	2233	2459	2935	3438
	24	L	8'6"	9'0"	9'5"	9'10"	10'3"	10'7"	11'0"	11'4"	12'0"	12'8"
		E	835	978	1128	1286	1449	1620	1797	1979	2361	2766
3 x 10	12	L	15'5"	16'3"	17'0"	17'9"	18'6"	19'2"	19'10"	20'6"	21'8"	22'11"
		E	1195	1399	1614	1838	2073	2317	2569	2831	3377	3956
	16	L	13'4"	14'1"	14'9"	15'5"	16'0"	16'7"	17'3"	17'9"	18'10"	19'11"
		E	1038	1215	1402	1597	1802	2013	2233	2459	2935	3438
	24	L	10'10"	11'5"	12'0"	12'6"	13'0"	13'6"	14'0"	14'5"	15'4"	16'2"
		E	835	978	1128	1286	1449	1620	1797	1979	2361	2766
3 x 12	12	L	18'9"	19'9"	20'8"	21'7"	22'6"	23'4"	24'2"	25'0"	26'5"	27'11"
		E	1195	1399	1614	1838	2073	2317	2569	2831	3377	3956
	16	L	16'3"	17'1"	17'11"	18'9"	19'6"	20'3"	20'11"	21'7"	22'11"	24'2"
		E	1038	1215	1402	1597	1802	2013	2233	2459	2935	3438
	24	L	13'2"	13'11"	14'7"	15'3"	15'10"	16'5"	17'0"	17'7"	18'7"	19'7"
		E	835	978	1128	1286	1449	1620	1797	1979	2361	2766
3 x 14	12	L	22'1"	23'3"	24'4"	25'5"	26'6"	27'6"	28'6"	29'5"	31'2"	32'10"
		E	1195	1399	1614	1838	2073	2317	2569	2831	3377	3956
	16	L	19'2"	20'2"	21'2"	22'1"	23'0"	23'10"	24'8"	25'6"	27'1"	28'6"
		E	1038	1215	1402	1597	1802	2013	2233	2459	2935	3438
	24	L	15'6"	16'4"	17'2"	17'11"	18'8"	19'5"	20'1"	20'9"	22'0"	23'2"
		E	835	978	1128	1286	1449	1620	1797	1979	2361	2766
4 x 8	12	L	14'4"	15'1"	15'10"	16'6"	17'2"	17'10"	18'5"	19'0"	20'3"	21'4"
		E	1426	1670	1928	2196	2475	2766	3068	3379	4034	4725
	16	L	12'5"	13'1"	13'9"	14'4"	14'11"	15'6"	16'1"	16'7"	17'7"	18'6"
		E	1243	1457	1681	1915	2159	2413	2677	2948	3516	4119
	24	L	10'2"	10'8"	11'2"	11'8"	12'2"	12'6"	13'1"	13'6"	14'4"	15'1"
		E	1009	1180	1363	1554	1752	1957	2170	2391	2795	3340
4 x 10	12	L	18'3"	19'3"	20'2"	21'1"	21'11"	22'9"	23'7"	24'4"	25'10"	27'3"
		E	1426	1670	1928	2196	2475	2766	3068	3379	4034	4725
	16	L	15'10"	16'8"	17'6"	18'4"	19'1"	19'10"	20'6"	21'2"	22'5"	23'7"
		E	1243	1457	1681	1915	2159	2413	2677	2948	3516	4119
	24	L	12'11"	13'7"	14'3"	14'11"	15'6"	16'1"	16'8"	17'2"	18'2"	19'3"
		E	1009	1180	1363	1554	1752	1957	2170	2391	2795	3340
4 x 12	12	L	22'3"	23'5"	24'6"	25'7"	26'8"	27'8"	28'8"	29'7"	31'5"	33'2"
		E	1426	1670	1928	2196	2475	2766	3068	3379	4034	4725
	16	L	19'3"	20'4"	21'4"	22'3"	23'2"	24'1"	24'11"	25'9"	27'3"	28'9"
		E	1243	1457	1681	1915	2159	2413	2677	2948	3516	4119
	24	L	15'9"	16'7"	17'4"	18'1"	18'10"	19'7"	20'3"	20'11"	22'2"	23'5"
		E	1009	1180	1363	1554	1752	1957	2170	2391	2795	3340

MAXIMUM SPANS— FLOOR JOISTS— 90 psf LIVE LOAD

See instructions for use of tables on page 231.

Symbols used in the tables are as follows:

F_b = Unit design stress at extreme fiber in bending, psi.

L = Clear distance between supports, feet.

E = Minimum required modulus of elasticity, 1000 psi, if deflection under the live load is limited to $\ell/360$.

Joist sizes are expressed as nominal but calculations are based on dressed sizes (see pages 25-27).

Size of Joist	Spacing C. to C.		F_b									
			900	1000	1100	1200	1300	1400	1500	1600	1800	2000
2 x 12	12	L	13'9"	14'6"	15'3"	15'11"	16'7"	17'2"	17'9"	18'4"	19'5"	20'6"
		E	890	1042	1203	1370	1545	1727	1916	2110	2517	2948
	16	L	11'11"	12'7"	13'3"	13'10"	14'5"	14'11"	15'5"	15'11"	16'11"	17'10"
		E	774	907	1045	1423	1343	1502	1665	1834	2188	2563
	24	L	9'8"	10'3"	10'9"	11'2"	11'7"	12'1"	12'6"	12'11"	13'9"	14'6"
		E	623	729	841	958	1081	1208	1339	1475	1760	2062
2 x 14	12	L	16'2"	17'1"	17'11"	18'9"	19'6"	20'3"	20'11"	21'7"	22'11"	24'2"
		E	890	1042	1203	1370	1545	1727	1916	2110	2517	2942
	16	L	14'1"	14'10"	15'7"	16'3"	16'11"	17'7"	18'2"	18'9"	19'11"	21'0"
		E	774	907	1045	1423	1343	1502	1665	1834	2188	2563
	24	L	11'5"	12'0"	12'7"	13'2"	13'9"	14'3"	14'9"	15'3"	16'2"	17'1"
		E	623	729	841	958	1081	1208	1339	1475	1760	2062
3 x 8	12	L	11'5"	12'0"	12'7"	13'3"	13'9"	14'3"	14'9"	15'3"	16'2"	17'1"
		E	1149	1346	1553	1769	1995	2229	2472	2724	3249	3806
	16	L	9'11"	10'6"	11'0"	11'6"	12'0"	12'5"	12'10"	13'3"	14'1"	14'10"
		E	999	1169	1349	1537	1733	1937	2149	2366	2824	3309
	24	L	8'1"	8'6"	8'11"	9'4"	9'9"	10'1"	10'5"	10'9"	11'5"	12'1"
		E	804	941	1086	1237	1394	1558	1728	1904	2272	2661
3 x 10	12	L	14'7"	15'5"	16'2"	16'11"	17'7"	18'3"	18'11"	19'6"	20'8"	21'10"
		E	1149	1346	1553	1769	1995	2229	2472	2724	3249	3806
	16	L	12'8"	13'4"	14'0"	14'8"	15'3"	15'10"	16'5"	16'11"	17'11"	18'11"
		E	999	1169	1349	1537	1733	1937	2149	2366	2824	3309
	24	L	10'4"	10'10"	11'4"	11'10"	12'4"	12'10"	13'3"	13'8"	14'7"	15'4"
		E	804	941	1086	1237	1394	1558	1728	1904	2272	2661
3 x 12	12	L	17'9"	18'8"	19'7"	20'6"	21'4"	22'2"	22'11"	23'8"	25'2"	26'6"
		E	1149	1346	1553	1769	1995	2229	2472	2724	3249	3806
	16	L	15'5"	16'3"	17'0"	17'9"	18'6"	19'3"	19'11"	20'7"	21'9"	23'0"
		E	999	1169	1349	1537	1733	1937	2149	2366	2824	3309
	24	L	12'6"	13'2"	13'10"	14'5"	15'0"	15'7"	16'2"	16'8"	17'8"	18'7"
		E	804	941	1086	1237	1394	1558	1728	1904	2272	2661
3 x 14	12	L	20'11"	22'1"	23'2"	24'2"	25'2"	26'1"	27'0"	27'11"	29'7"	31'3"
		E	1149	1346	1553	1769	1995	2229	2472	2724	3249	3806
	16	L	18'2"	19'2"	20'1"	21'0"	21'10"	22'8"	23'5"	24'2"	25'7"	27'1"
		E	999	1169	1349	1537	1733	1937	2149	2366	2824	3309
	24	L	14'9"	15'7"	16'4"	17'0"	17'8"	18'4"	19'0"	19'7"	20'10"	22'0"
		E	804	941	1086	1237	1394	1558	1728	1904	2272	2661
4 x 8	12	L	13'7"	14'4"	15'0"	15'8"	16'4"	16'11"	17'6"	18'1"	19'2"	20'3"
		E	1370	1604	1852	2109	2378	2657	2948	3246	3875	4539
	16	L	11'10"	12'5"	13'0"	13'7"	14'2"	14'9"	15'3"	15'9"	16'8"	17'7"
		E	1194	1400	1614	1840	2074	2318	2572	2832	3378	3957
	24	L	9'7"	10'1"	10'7"	11'1"	11'7"	12'0"	12'5"	12'10"	13'7"	14'4"
		E	969	1134	1309	1493	1683	1880	2084	2297	2685	3209
4 x 10	12	L	17'4"	18'3"	19'2"	20'0"	20'10"	21'7"	22'4"	23'1"	24'6"	25'10"
		E	1370	1604	1852	2109	2378	2657	2948	3246	3875	4539
	16	L	15'1"	15'10"	16'7"	17'4"	18'1"	18'9"	19'5"	20'1"	21'3"	22'5"
		E	1194	1400	1614	1840	2074	2318	2572	2832	3378	3957
	24	L	12'3"	12'11"	13'7"	14'2"	14'9"	15'4"	15'10"	16'4"	17'3"	18'3"
		E	969	1134	1309	1493	1683	1880	2084	2297	2685	3209
4 x 12	12	L	21'1"	22'3"	23'4"	24'4"	25'4"	26'4"	27'3"	28'1"	29'10"	31'5"
		E	1370	1604	1852	2109	2378	2657	2948	3246	3875	4539
	16	L	18'4"	19'4"	20'3"	21'2"	22'0"	22'10"	23'8"	24'5"	25'11"	27'4"
		E	1194	1400	1614	1840	2074	2318	2572	2832	3378	3957
	24	L	14'11"	15'9"	16'6"	17'3"	17'11"	18'7"	19'3"	19'11"	20'11"	22'3"
		E	969	1134	1309	1493	1683	1880	2084	2297	2685	3209
4 x 14	12	L	25'4"	26'8"	28'0"	29'3"	30'5"	31'7"	32'8"	33'9"	35'9"	37'9"
		E	1370	1604	1852	2109	2378	2657	2948	3246	3875	4539
	16	L	22'0"	23'2"	24'3"	25'4"	26'5"	27'5"	28'4"	29'3"	31'0"	32'9"
		E	1194	1400	1614	1840	2074	2318	2572	2832	3378	3957
	24	L	17'11"	18'10"	19'9"	20'8"	21'6"	22'4"	23'1"	23'10"	25'4"	26'8"
		E	969	1134	1309	1493	1683	1880	2084	2297	2685	3209

MAXIMUM SPANS—FLOOR JOISTS—100 psf LIVE LOAD

See instructions for use of tables on page 231.

Symbols used in the tables are as follows:

F_b = Unit design stress at extreme fiber in bending, psi.

L = Clear distance between supports, feet.

E = Minimum required modulus of elasticity, 1000 psi, if deflection under the live load is limited to $\ell/360$.

Joist sizes are expressed as nominal but calculations are based on dressed sizes (see pages 25-27).

Size of Joist	Spacing C. to C.		F_b									
			900	1000	1100	1200	1300	1400	1500	1600	1800	2000
2 x 12	12	L	13'1"	13'10"	14'6"	15'2"	15'9"	16'4"	16'11"	17'6"	18'6"	19'6"
		E	855	1002	1156	1317	1384	1660	1841	2028	2419	2833
	16	L	11'4"	12'0"	12'7"	13'2"	13'8"	14'2"	14'8"	15'2"	16'1"	17'0"
		E	743	871	1005	1145	1291	1443	1600	1762	2103	2463
	24	L	9'3"	9'9"	10'3"	10'8"	11'1"	11'6"	11'11"	12'4"	13'1"	13'11"
		E	599	701	808	920	1039	1161	1287	1417	1692	1981
2 x 14	12	L	15'5"	16'3"	17'1"	17'10"	18'7"	19'3"	19'11"	20'7"	21'10"	23'0"
		E	855	1002	1156	1317	1384	1660	1841	2028	2419	2833
	16	L	13'4"	14'1"	14'10"	15'6"	16'1"	16'8"	17'3"	17'10"	18'11"	20'0"
		E	743	871	1005	1145	1291	1443	1600	1762	2103	2463
	24	L	10'11"	11'6"	12'1"	12'7"	13'1"	13'7"	14'1"	14'6"	15'4"	16'2"
		E	599	701	808	920	1039	1161	1287	1417	1692	1981
3 x 8	12	L	10'11"	11'6"	12'1"	12'7"	13'1"	13'7"	14'1"	14'7"	15'5"	16'3"
		E	1104	1294	1492	1700	1917	2142	2375	2618	3123	3658
	16	L	9'6"	10'0"	10'6"	10'11"	11'4"	11'9"	12'2"	12'7"	13'4"	14'1"
		E	960	1124	1297	1477	1666	1861	2065	2274	2714	3179
	24	L	7'7"	8'1"	8'6"	8'11"	9'3"	9'7"	9'11"	10'3"	10'10"	11'5"
		E	772	904	1043	1189	1340	1498	1661	1830	2183	2557
3 x 10	12	L	13'10"	14'7"	15'4"	16'1"	16'9"	17'5"	18'0"	18'7"	19'8"	20'9"
		E	1104	1294	1492	1700	1917	2142	2375	2618	3123	3658
	16	L	12'1"	12'9"	13'4"	13'11"	14'6"	15'1"	15'7"	16'1"	17'1"	18'0"
		E	960	1124	1297	1477	1666	1861	2065	2274	2714	3179
	24	L	9'10"	10'4"	10'10"	11'4"	11'10"	12'3"	12'8"	13'1"	13'10"	14'7"
		E	772	904	1043	1189	1340	1498	1661	1830	2183	2557
3 x 12	12	L	16'11"	17'10"	18'9"	19'7"	20'4"	21'1"	21'10"	22'6"	23'11"	25'3"
		E	1104	1294	1492	1700	1917	2142	2375	2618	3123	3658
	16	L	14'8"	15'6"	16'3"	16'11"	17'7"	18'3"	18'11"	19'6"	20'9"	21'11"
		E	960	1124	1297	1477	1666	1861	2065	2274	2714	3179
	24	L	11'11"	12'7"	13'2"	13'9"	14'4"	14'10"	15'4"	15'10"	16'10"	17'9"
		E	772	904	1043	1189	1340	1498	1661	1830	2183	2557
3 x 14	12	L	19'11"	21'0"	22'0"	23'0"	23'11"	24'10"	25'9"	26'7"	28'2"	29'9"
		E	1104	1294	1492	1700	1917	2142	2375	2618	3123	3658
	16	L	17'3"	18'2"	19'1"	19'11"	20'9"	21'7"	22'4"	23'1"	24'5"	25'9"
		E	960	1124	1297	1477	1666	1861	2065	2274	2714	3179
	24	L	14'1"	14'10"	15'7"	16'3"	16'11"	17'7"	18'2"	18'9"	19'10"	20'11"
		E	772	904	1043	1189	1340	1498	1661	1830	2183	2557
4 x 8	12	L	13'0"	13'8"	14'4"	15'0"	15'7"	16'2"	16'9"	17'3"	18'4"	19'4"
		E	1320	1546	1785	2033	2292	2561	2841	3129	3735	4375
	16	L	11'3"	11'10"	12'5"	13'0"	13'6"	14'0"	14'6"	15'0"	15'11"	16'9"
		E	1151	1349	1556	1773	1999	2234	2479	2730	3256	3816
	24	L	9'1"	9'7"	10'1"	10'7"	11'0"	11'5"	11'10"	12'3"	12'11"	13'7"
		E	934	1093	1262	1439	1622	1812	2009	2214	2588	3093
4 x 10	12	L	16'6"	17'5"	18'3"	19'1"	19'10"	20'7"	21'4"	22'1"	23'4"	24'7"
		E	1320	1546	1785	2033	2296	2561	2841	3129	3735	4375
	16	L	14'4"	15'1"	15'10"	16'7"	17'3"	17'11"	18'7"	19'2"	20'5"	21'5"
		E	1151	1349	1556	1773	1999	2234	2479	2730	3256	3816
	24	L	11'8"	12'4"	12'11"	13'6"	14'1"	14'7"	15'1"	15'7"	16'5"	17'5"
		E	934	1093	1262	1439	1622	1812	2009	2214	2588	3093
4 x 12	12	L	20'1"	21'2"	22'3"	23'3"	24'2"	25'0"	25'10"	26'8"	28'5"	30'0"
		E	1320	1546	1785	2033	2292	2561	2841	3121	3735	4375
	16	L	17'5"	18'5"	19'4"	20'2"	21'0"	21'9"	22'6"	23'3"	24'8"	26'0"
		E	1151	1349	1556	1773	1999	2234	2479	2730	3256	3814
	24	L	14'3"	15'0"	15'9"	16'5"	17'1"	17'9"	18'4"	18'11"	20'0"	21'2"
		E	934	1093	1262	1439	1622	1812	2009	2214	2588	3093
4 x 14	12	L	24'2"	25'5"	26'8"	27'10"	29'0"	30'1"	31'2"	32'2"	34'2"	36'0"
		E	1320	1546	1785	2033	2292	2561	2841	3129	3735	4375
	16	L	21'0"	22'1"	23'2"	24'2"	25'2"	26'1"	27'0"	27'10"	29'7"	31'3"
		E	1151	1349	1556	1773	1999	2234	2479	2730	3256	3814
	24	L	17'1"	18'0"	18'10"	19'8"	20'6"	21'3"	22'0"	22'9"	24'2"	25'5"
		E	934	1093	1262	1439	1622	1812	2009	2214	2588	3093