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WESTERN



AUSTRALIA

FORESTS DEPARTMENT

Cubic Contents of Logs
and some
Associated Tables

These tables are a revision and extension
of those issued in 1920 and 1933 under the title
"Table of Contents in Cubic Feet of Logs"

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PREAMBLE

Measurement of Logs

For the purpose of royalty assessment, the method of measuring and calculating the volume of logs obtained from State Forests, Timber Reserves, and Crown Lands, is as follows :—

(a) *Length :*

The length of butt logs shall be measured from the top of the sloven to the sawcut at the crown end of the log and other logs shall be measured from sawcut to sawcut. Such measurement shall be entered in the Mill Landing and Mill Log books in feet only, and for the purpose of those entries nine inches or over will be regarded as an additional foot, but under nine inches will be ignored.

EXAMPLE

Actual length of log 25' 8" should be recorded as 25'.

Actual length of log 25' 9" should be recorded as 26'.

(b) *Girth :*

The girth of logs shall be measured at a point equi-distant from the top of sloven and the crown end of butt logs and at a point equi-distant from both ends of other logs.

One inch may be allowed for each foot of bark on the log under the tape, but no such allowance shall exceed a maximum of 8 inches.

In the case of logs with an abnormal swelling in the centre, the average of the butt and crown girth shall be taken, but both measurements of girth must be entered in the Mill Landing book.

(c) *Cubic Contents :*

The cubic contents of logs shall be calculated as follows :—

The area of the "cross section" of the log at the point where the girth is measured in accordance with paragraph (b) multiplied by the length of the log, measured in accordance with paragraph (a).

The cubic contents of logs of various girths and lengths are set out in Table 1.

The cubic contents of logs shall be calculated to the nearest cubic foot and entered in the Mill Landing and Mill Log books.

Under .5 of a cubic foot will not be calculated, .5 and over will be taken to the next cubic foot, e.g.:

Example

Length Feet	Mid-Girth	Volume Cubic feet	To be shown
10	4'1"	13.3	13
10	4'0"	12.7	13

Note—

(1) Area of cross section has been calculated by using the formula—

$$\text{Area in square feet} = \frac{(\text{Girth in inches})^2}{4\pi \times 144}$$

the value of π used was 3.1416.

As the value $\frac{1}{4\pi \times 144}$ can be expressed as .00055262 it may

be found easier to multiply the square of the girth in inches by this value when calculating the cross sectional area. The number of decimals can be adjusted to conform with the accuracy required.

(2) As all volumes given are cylinder volumes, log lengths not shown can be calculated by adding or dividing the volumes of appropriate cylinder lengths to make up the length required.

EXAMPLES

(a)	Log Length 65 feet.	Mid Girth 10 ft. 6 in.	
	Length 35 feet.		Vol. 307 cub. feet.
	Length 30 feet.		Vol. 263 cub. feet.
Total	<u>Length 65 feet.</u>	Total	<u>Vol. 570 cub. feet.</u>

(b) *Sleeper Lengths.*—Using the mid-girth of the length concerned, the volume can be obtained by halving the volume corresponding to double the length as in table of examples below.

Sleeper Length	Twice Sleeper Length	Mid-Girth	Cubic Feet	
			Vol. of Twice Sleeper Length	Vol. of Sleeper Length
6 ft. 6 in.	13 ft.	5 ft. 2 in.	27.6	13.8
7 ft.	14 ft.	5 ft. 8 in.	35.8	17.9
8 ft.	16 ft.	5 ft. 4 in.	36.2	18.1
8 ft. 6 in.	17 ft.	5 ft. 7 in.	42.3	21.1
9 ft.	18 ft.	5 ft. 9 in.	47.4	23.7

(3) For the calculation of standing volumes special tables have been calculated giving the mid-girth under bark corresponding to any measured girth at breast-height.

For simplicity in use an alignment chart has been constructed.

TABLE 1.—CONTENTS OF LOGS IN CUBIC FEET
MID-GIRTH 6 in. to 11½ in.

Length Feet	6	6½	7	7½	8	8½	9	9½	10	10½	11	11½	Length Feet
1	.019	.023	.027	.031	.035	.040	.045	.050	.055	.061	.067	.073	1
2	.039	.047	.054	.062	.071	.080	.089	.100	.111	.122	.134	.146	2
3	.059	.070	.081	.093	.106	.120	.134	.150	.166	.183	.201	.219	3
4	.079	.093	.108	.124	.141	.160	.179	.199	.221	.244	.267	.292	4
5	.099	.117	.135	.155	.177	.200	.224	.249	.276	.305	.334	.365	5
6	.119	.140	.162	.187	.212	.240	.269	.299	.332	.366	.401	.439	6
7	.139	.163	.189	.218	.248	.279	.313	.349	.387	.426	.468	.512	7
8	.159	.187	.217	.249	.283	.319	.358	.399	.442	.487	.535	.585	8
9	.179	.210	.244	.280	.318	.359	.403	.449	.497	.548	.602	.658	9
10	.199	.233	.271	.311	.354	.399	.448	.499	.553	.609	.669	.731	10
11	.219	.257	.298	.342	.389	.439	.492	.549	.608	.670	.736	.804	11
12	.239	.280	.325	.373	.424	.479	.537	.598	.663	.731	.802	.877	12
13	.259	.304	.352	.404	.459	.519	.582	.648	.718	.792	.869	.950	13
14	.279	.327	.379	.435	.495	.559	.627	.698	.774	.853	.936	1.02	14
15	.298	.350	.406	.466	.531	.599	.671	.748	.829	.914	1.00	1.10	15
16	.318	.374	.433	.497	.566	.639	.716	.798	.884	.975	1.07	1.17	16
17	.338	.397	.460	.528	.601	.679	.761	.848	.939	1.04	1.14	1.24	17
18	.358	.420	.487	.560	.637	.719	.806	.898	.995	1.10	1.20	1.32	18
19	.378	.444	.515	.591	.672	.759	.850	.948	1.05	1.16	1.27	1.39	19
20	.398	.467	.542	.622	.707	.799	.895	.997	1.11	1.22	1.34	1.46	20
21	.418	.490	.569	.653	.743	.838	.940	1.05	1.16	1.28	1.40	1.53	21
22	.438	.514	.596	.684	.778	.878	.985	1.10	1.22	1.34	1.47	1.61	22
23	.458	.537	.623	.715	.813	.918	1.03	1.15	1.27	1.40	1.54	1.68	23
24	.477	.560	.650	.746	.849	.958	1.07	1.20	1.33	1.46	1.60	1.75	24
25	.497	.584	.677	.777	.884	.998	1.12	1.25	1.38	1.52	1.67	1.83	25
26	.517	.607	.704	.808	.919	1.04	1.16	1.30	1.44	1.58	1.74	1.90	26
27	.537	.630	.731	.839	.955	1.08	1.21	1.35	1.49	1.65	1.81	1.97	27
28	.557	.654	.758	.870	.990	1.12	1.25	1.40	1.55	1.71	1.87	2.05	28
29	.577	.677	.785	.901	1.03	1.16	1.30	1.45	1.60	1.77	1.94	2.12	29
30	.597	.700	.812	.933	1.06	1.20	1.34	1.50	1.66	1.83	2.01	2.19	30
31	.617	.724	.839	.964	1.10	1.24	1.39	1.55	1.71	1.89	2.07	2.27	31
32	.637	.747	.866	.995	1.13	1.28	1.43	1.60	1.77	1.95	2.14	2.34	32
33	.656	.770	.894	1.03	1.17	1.32	1.48	1.65	1.82	2.01	2.21	2.41	33
34	.676	.794	.921	1.06	1.20	1.36	1.52	1.70	1.88	2.07	2.27	2.48	34
35	.696	.817	.948	1.09	1.24	1.40	1.57	1.75	1.93	2.13	2.34	2.56	35
36	.716	.841	.975	1.12	1.27	1.44	1.61	1.80	1.99	2.19	2.41	2.63	36
37	.736	.864	1.00	1.15	1.31	1.48	1.66	1.85	2.04	2.25	2.47	2.70	37
38	.756	.887	1.03	1.18	1.34	1.52	1.70	1.90	2.10	2.32	2.54	2.78	38
39	.776	.911	1.06	1.21	1.38	1.56	1.75	1.95	2.16	2.38	2.61	2.85	39
40	.796	.934	1.08	1.24	1.41	1.60	1.79	1.99	2.21	2.44	2.67	2.92	40
41	.816	.957	1.11	1.27	1.45	1.64	1.84	2.04	2.27	2.50	2.74	3.00	41
42	.836	.981	1.14	1.31	1.49	1.68	1.88	2.09	2.32	2.56	2.81	3.07	42
43	.855	1.00	1.16	1.34	1.52	1.72	1.92	2.14	2.38	2.62	2.88	3.14	43
44	.875	1.03	1.19	1.37	1.56	1.76	1.97	2.19	2.43	2.68	2.94	3.22	44
45	.895	1.05	1.22	1.40	1.59	1.80	2.01	2.24	2.49	2.74	3.01	3.29	45

MID-GIRTH 1 ft. 0 in. to 1 ft. 5 1/2 in.

Length Feet	0	1/4	1	1 1/2	2	2 1/2	3	3 1/2	4	4 1/2	5	5 1/2	Length Feet
1	.079	.086	.093	.101	.108	.116	.124	.133	.141	.150	.159	.169	1
2	.159	.173	.187	.201	.217	.232	.249	.266	.283	.301	.319	.338	2
3	.239	.259	.280	.302	.325	.349	.373	.398	.424	.451	.479	.508	3
4	.318	.343	.374	.403	.433	.465	.497	.531	.566	.602	.639	.677	4
5	.398	.433	.467	.504	.542	.581	.622	.664	.707	.752	.800	.846	5
6	.477	.518	.560	.604	.649	.697	.746	.797	.849	.903	.958	1.02	6
7	.557	.604	.654	.705	.758	.813	.870	.929	.990	1.05	1.12	1.18	7
8	.637	.691	.747	.806	.867	.930	.995	1.06	1.13	1.20	1.28	1.35	8
9	.716	.777	.841	.906	.975	1.05	1.12	1.19	1.27	1.35	1.44	1.52	9
10	.796	.863	.934	1.01	1.08	1.16	1.24	1.33	1.41	1.50	1.60	1.69	10
11	.875	.950	1.03	1.11	1.19	1.28	1.37	1.46	1.56	1.65	1.76	1.86	11
12	.955	1.04	1.12	1.21	1.30	1.39	1.49	1.59	1.70	1.81	1.92	2.03	12
13	1.03	1.12	1.21	1.31	1.41	1.51	1.62	1.73	1.84	1.96	2.08	2.20	13
14	1.11	1.21	1.31	1.41	1.52	1.63	1.74	1.86	1.98	2.11	2.24	2.37	14
15	1.19	1.30	1.40	1.51	1.62	1.74	1.87	1.99	2.12	2.26	2.40	2.54	15
16	1.27	1.38	1.49	1.61	1.73	1.86	1.99	2.12	2.26	2.41	2.56	2.71	16
17	1.35	1.47	1.59	1.71	1.84	1.98	2.11	2.26	2.40	2.56	2.71	2.88	17
18	1.43	1.55	1.68	1.81	1.95	2.09	2.24	2.39	2.55	2.71	2.87	3.05	18
19	1.51	1.64	1.77	1.91	2.06	2.21	2.36	2.52	2.69	2.86	3.03	3.22	19
20	1.59	1.73	1.87	2.01	2.17	2.32	2.49	2.66	2.83	3.01	3.19	3.38	20
21	1.67	1.81	1.96	2.12	2.27	2.44	2.61	2.79	2.97	3.16	3.35	3.55	21
22	1.75	1.90	2.05	2.22	2.38	2.56	2.74	2.92	3.11	3.31	3.51	3.72	22
23	1.83	1.99	2.15	2.32	2.49	2.67	2.86	3.05	3.25	3.46	3.67	3.89	23
24	1.91	2.07	2.24	2.42	2.60	2.79	2.98	3.19	3.39	3.61	3.83	4.06	24
25	1.99	2.16	2.33	2.52	2.71	2.90	3.11	3.32	3.54	3.76	3.99	4.23	25
26	2.07	2.25	2.43	2.62	2.82	3.02	3.23	3.45	3.68	3.91	4.15	4.40	26
27	2.15	2.33	2.52	2.72	2.92	3.14	3.36	3.58	3.82	4.06	4.31	4.57	27
28	2.23	2.42	2.61	2.82	3.03	3.25	3.48	3.72	3.96	4.21	4.47	4.74	28
29	2.31	2.50	2.71	2.92	3.14	3.37	3.61	3.85	4.10	4.36	4.63	4.91	29
30	2.39	2.59	2.80	3.02	3.25	3.49	3.73	3.98	4.24	4.51	4.79	5.08	30
31	2.47	2.68	2.90	3.12	3.36	3.60	3.85	4.12	4.39	4.66	4.95	5.25	31
32	2.55	2.76	2.99	3.22	3.47	3.72	3.98	4.25	4.53	4.81	5.11	5.42	32
33	2.63	2.85	3.08	3.32	3.57	3.83	4.10	4.38	4.67	4.96	5.27	5.58	33
34	2.71	2.94	3.18	3.42	3.68	3.95	4.23	4.51	4.81	5.12	5.43	5.75	34
35	2.79	3.02	3.27	3.53	3.79	4.07	4.35	4.65	4.95	5.27	5.59	5.92	35
36	2.86	3.11	3.36	3.63	3.90	4.18	4.48	4.78	5.09	5.42	5.75	6.09	36
37	2.94	3.19	3.46	3.73	4.01	4.30	4.60	4.91	5.23	5.57	5.91	6.26	37
38	3.03	3.28	3.55	3.83	4.12	4.42	4.72	5.05	5.38	5.72	6.07	6.43	38
39	3.10	3.37	3.64	3.93	4.23	4.53	4.85	5.18	5.52	5.87	6.23	6.60	39
40	3.18	3.45	3.74	4.03	4.33	4.65	4.97	5.31	5.66	6.02	6.39	6.77	40
41	3.26	3.54	3.83	4.13	4.44	4.76	5.10	5.44	5.80	6.17	6.55	6.94	41
42	3.34	3.63	3.92	4.23	4.55	4.88	5.23	5.58	5.94	6.32	6.71	7.11	42
43	3.42	3.71	4.02	4.33	4.66	5.00	5.35	5.71	6.08	6.47	6.87	7.28	43
44	3.50	3.80	4.11	4.43	4.77	5.11	5.47	5.84	6.22	6.62	7.03	7.45	44
45	3.58	3.89	4.20	4.53	4.87	5.23	5.60	5.97	6.37	6.77	7.19	7.62	45

MID-GIRTH 1 ft. 6 in. to 1 ft. 11½ in.

Length Feet	6	6½	7	7½	8	8½	9	9½	10	10½	11	11½	Length Feet
1	.179	.189	.199	.210	.221	.232	.244	.255	.267	.280	.292	.305	1
2	.358	.378	.399	.420	.442	.464	.487	.511	.535	.560	.585	.610	2
3	.537	.567	.598	.630	.663	.697	.731	.766	.802	.839	.877	.916	3
4	.716	.757	.798	.841	.884	.929	.975	1.02	1.07	1.12	1.17	1.22	4
5	.895	.946	1.00	1.05	1.11	1.16	1.22	1.28	1.34	1.40	1.46	1.53	5
6	1.07	1.13	1.20	1.26	1.33	1.39	1.46	1.53	1.60	1.68	1.75	1.83	6
7	1.25	1.32	1.40	1.47	1.55	1.63	1.71	1.79	1.87	1.96	2.05	2.14	7
8	1.43	1.51	1.60	1.68	1.77	1.86	1.95	2.04	2.14	2.24	2.34	2.44	8
9	1.61	1.70	1.80	1.89	1.99	2.09	2.19	2.30	2.41	2.52	2.63	2.75	9
10	1.79	1.89	2.00	2.10	2.21	2.32	2.43	2.55	2.67	2.80	2.92	3.05	10
11	1.97	2.08	2.19	2.31	2.43	2.55	2.68	2.81	2.94	3.08	3.22	3.36	11
12	2.15	2.27	2.39	2.52	2.65	2.79	2.92	3.07	3.21	3.36	3.51	3.66	12
13	2.33	2.46	2.59	2.73	2.87	3.02	3.17	3.32	3.48	3.64	3.80	3.97	13
14	2.51	2.65	2.79	2.94	3.09	3.25	3.41	3.58	3.74	3.92	4.09	4.27	14
15	2.69	2.84	2.99	3.15	3.32	3.48	3.66	3.83	4.01	4.20	4.39	4.58	15
16	2.86	3.03	3.19	3.36	3.54	3.72	3.90	4.09	4.28	4.48	4.68	4.88	16
17	3.04	3.22	3.39	3.57	3.76	3.95	4.14	4.34	4.55	4.76	4.97	5.19	17
18	3.22	3.40	3.59	3.78	3.98	4.18	4.39	4.60	4.81	5.04	5.26	5.49	18
19	3.40	3.59	3.79	3.99	4.20	4.41	4.63	4.85	5.08	5.32	5.55	5.80	19
20	3.58	3.78	3.98	4.20	4.42	4.64	4.87	5.11	5.35	5.60	5.85	6.10	20

21	3.76	3.97	4.19	4.41	4.64	4.88	5.12	5.36	5.62	5.88	6.14	6.41	21
22	3.94	4.16	4.39	4.62	4.86	5.11	5.36	5.62	5.88	6.15	6.43	6.71	22
23	4.12	4.35	4.59	4.83	5.08	5.34	5.61	5.88	6.15	6.43	6.72	7.02	23
24	4.30	4.54	4.79	5.04	5.31	5.57	5.85	6.13	6.42	6.71	7.02	7.32	24
25	4.48	4.73	4.99	5.25	5.53	5.81	6.09	6.39	6.69	6.99	7.31	7.63	25
26	4.66	4.92	5.19	5.46	5.75	6.04	6.34	6.64	6.95	7.27	7.60	7.93	26
27	4.83	5.11	5.39	5.67	5.97	6.27	6.58	6.90	7.22	7.55	7.89	8.24	27
28	5.01	5.30	5.59	5.88	6.19	6.50	6.82	7.15	7.49	7.83	8.19	8.55	28
29	5.19	5.48	5.79	6.09	6.41	6.73	7.07	7.41	7.76	8.11	8.48	8.85	29
30	5.37	5.67	5.98	6.30	6.63	6.97	7.31	7.66	8.02	8.39	8.77	9.16	30
31	5.55	5.86	6.18	6.51	6.85	7.20	7.56	7.92	8.29	8.67	9.06	9.46	31
32	5.73	6.05	6.38	6.72	7.07	7.43	7.80	8.17	8.56	8.95	9.36	9.77	32
33	5.91	6.24	6.58	6.93	7.29	7.66	8.04	8.43	8.83	9.23	9.65	10.1	33
34	6.09	6.43	6.78	7.14	7.52	7.90	8.29	8.69	9.09	9.51	9.94	10.4	34
35	6.27	6.62	6.98	7.35	7.74	8.13	8.53	8.94	9.36	9.79	10.2	10.7	35
36	6.45	6.81	7.18	7.56	7.96	8.36	8.77	9.20	9.63	10.1	10.5	11.0	36
37	6.62	7.00	7.38	7.77	8.18	8.59	9.02	9.45	9.90	10.4	10.8	11.3	37
38	6.80	7.19	7.58	7.99	8.40	8.83	9.26	9.71	10.2	10.6	11.1	11.6	38
39	6.98	7.38	7.78	8.20	8.63	9.06	9.50	9.96	10.4	10.9	11.4	11.9	39
40	7.16	7.57	7.98	8.41	8.84	9.29	9.75	10.2	10.7	11.2	11.7	12.2	40
41	7.34	7.75	8.18	8.62	9.06	9.52	9.99	10.5	11.0	11.5	12.0	12.5	41
42	7.52	7.94	8.38	8.83	9.28	9.75	10.2	10.7	11.2	11.8	12.3	12.8	42
43	7.70	8.13	8.58	9.04	9.51	9.99	10.5	11.0	11.5	12.0	12.6	13.1	43
44	7.88	8.32	8.78	9.25	9.73	10.2	10.7	11.2	11.8	12.3	12.9	13.4	44
45	8.06	8.51	8.98	9.46	9.95	10.5	11.0	11.5	12.0	12.6	13.2	13.7	45

MID-GIRTH 2 ft. 0 in. to 2 ft. 5½ in.

Length Feet	0	½	1	1½	2	2½	3	3½	4	4½	5	5½	Length Feet
1	.318	.332	.345	.359	.374	.388	.403	.418	.433	.449	.465	.481	1
2	.637	.663	.691	.719	.747	.776	.806	.836	.867	.898	.930	.962	2
3	.955	.995	1.04	1.08	1.12	1.16	1.21	1.25	1.30	1.35	1.39	1.44	3
4	1.27	1.33	1.38	1.44	1.49	1.55	1.61	1.67	1.73	1.80	1.86	1.92	4
5	1.59	1.66	1.73	1.80	1.87	1.94	2.01	2.09	2.17	2.24	2.32	2.40	5
6	1.91	1.99	2.07	2.16	2.24	2.33	2.42	2.51	2.60	2.69	2.79	2.89	6
7	2.23	2.32	2.42	2.52	2.62	2.72	2.82	2.93	3.03	3.14	3.25	3.37	7
8	2.55	2.65	2.76	2.87	2.99	3.10	3.22	3.34	3.47	3.59	3.72	3.85	8
9	2.86	2.99	3.11	3.23	3.36	3.49	3.63	3.76	3.90	4.04	4.18	4.33	9
10	3.18	3.32	3.45	3.59	3.74	3.88	4.03	4.18	4.33	4.48	4.65	4.81	10
11	3.50	3.65	3.80	3.95	4.11	4.27	4.43	4.60	4.77	4.94	5.11	5.29	11
12	3.82	3.98	4.14	4.31	4.48	4.66	4.83	5.02	5.20	5.39	5.58	5.77	12
13	4.14	4.31	4.49	4.67	4.86	5.05	5.24	5.43	5.63	5.84	6.04	6.25	13
14	4.46	4.64	4.84	5.03	5.23	5.43	5.64	5.85	6.07	6.28	6.51	6.73	14
15	4.77	4.98	5.18	5.39	5.60	5.82	6.04	6.27	6.50	6.73	6.97	7.21	15
16	5.09	5.31	5.53	5.75	5.98	6.21	6.45	6.69	6.93	7.18	7.44	7.69	16
17	5.41	5.64	5.87	6.11	6.35	6.60	6.85	7.10	7.37	7.63	7.90	8.18	17
18	5.73	5.97	6.22	6.47	6.72	6.99	7.25	7.52	7.80	8.08	8.37	8.66	18
19	6.05	6.30	6.56	6.83	7.10	7.37	7.66	7.94	8.23	8.53	8.83	9.14	19
20	6.37	6.63	6.91	7.19	7.47	7.76	8.06	8.36	8.67	8.98	9.30	9.62	20
21	6.68	6.97	7.25	7.55	7.85	8.15	8.46	8.78	9.10	9.43	9.76	10.1	21
22	7.00	7.30	7.60	7.91	8.22	8.54	8.86	9.19	9.53	9.88	10.2	10.6	22
23	7.32	7.63	7.94	8.26	8.59	8.93	9.27	9.61	9.97	10.3	10.7	11.1	23
24	7.64	7.96	8.29	8.62	8.97	9.31	9.67	10.0	10.4	10.8	11.2	11.5	24
25	7.96	8.29	8.64	8.98	9.34	9.70	10.1	10.4	10.8	11.2	11.6	12.0	25
26	8.28	8.62	8.98	9.34	9.71	10.1	10.5	10.9	11.3	11.7	12.1	12.5	26
27	8.59	8.96	9.33	9.70	10.1	10.5	10.9	11.3	11.7	12.1	12.6	13.0	27
28	8.91	9.29	9.67	10.1	10.5	10.9	11.3	11.7	12.1	12.6	13.0	13.5	28
29	9.23	9.62	10.0	10.4	10.8	11.3	11.7	12.1	12.6	13.0	13.5	13.9	29
30	9.55	9.95	10.4	10.8	11.2	11.6	12.1	12.5	13.0	13.5	13.9	14.4	30
31	9.87	10.3	10.7	11.1	11.6	12.0	12.5	13.0	13.4	13.9	14.4	14.9	31
32	10.2	10.6	11.1	11.5	12.0	12.4	12.9	13.4	13.9	14.4	14.9	15.4	32
33	10.5	10.9	11.4	11.9	12.3	12.8	13.3	13.8	14.3	14.8	15.3	15.9	33
34	10.8	11.3	11.7	12.2	12.7	13.2	13.7	14.2	14.7	15.3	15.8	16.4	34
35	11.1	11.6	12.1	12.6	13.1	13.6	14.1	14.6	15.2	15.7	16.3	16.8	35
36	11.5	11.9	12.4	12.9	13.5	14.0	14.5	15.0	15.6	16.2	16.7	17.3	36
37	11.8	12.3	12.8	13.3	13.8	14.4	14.9	15.5	16.0	16.6	17.2	17.8	37
38	12.1	12.6	13.1	13.7	14.2	14.7	15.3	15.9	16.5	17.1	17.7	18.3	38
39	12.4	12.9	13.5	14.0	14.6	15.1	15.7	16.3	16.9	17.5	18.1	18.8	39
40	12.7	13.3	13.8	14.4	14.9	15.5	16.1	16.7	17.3	18.0	18.6	19.2	40
41	13.1	13.6	14.2	14.7	15.3	15.9	16.5	17.1	17.8	18.4	19.1	19.7	41
42	13.4	13.9	14.5	15.1	15.7	16.3	16.9	17.6	18.2	18.9	19.5	20.2	42
43	13.7	14.3	14.9	15.5	16.1	16.7	17.3	18.0	18.6	19.3	20.0	20.7	43
44	14.0	14.6	15.2	15.8	16.4	17.1	17.7	18.4	19.1	19.8	20.5	21.2	44
45	14.3	14.9	15.5	16.2	16.8	17.5	18.1	18.8	19.5	20.2	20.9	21.6	45

MID-GIRTH 2 ft. 6 in. to 2 ft. 11½ in.

Length Feet	6	6½	7	7½	8	8½	9	9½	10	10½	11	11½	Length Feet
1	.497	.514	.531	.548	.566	.584	.602	.620	.639	.658	.677	.696	1
2	.995	1.03	1.06	1.10	1.13	1.17	1.20	1.24	1.28	1.32	1.35	1.39	2
3	1.49	1.54	1.59	1.65	1.70	1.75	1.81	1.86	1.92	1.97	2.03	2.09	3
4	1.99	2.06	2.12	2.19	2.26	2.33	2.41	2.48	2.56	2.63	2.71	2.79	4
5	2.49	2.57	2.66	2.74	2.83	2.92	3.01	3.10	3.19	3.29	3.38	3.48	5
6	2.96	3.08	3.19	3.29	3.40	3.50	3.61	3.72	3.83	3.95	4.06	4.18	6
7	3.43	3.60	3.72	3.84	3.96	4.09	4.21	4.34	4.47	4.60	4.74	4.88	7
8	3.98	4.11	4.25	4.39	4.53	4.67	4.81	4.96	5.11	5.26	5.42	5.57	8
9	4.48	4.63	4.78	4.94	5.09	5.25	5.42	5.58	5.75	5.92	6.09	6.27	9
10	4.97	5.14	5.31	5.48	5.66	5.84	6.02	6.20	6.39	6.58	6.77	6.96	10
11	5.47	5.65	5.84	6.03	6.22	6.42	6.62	6.82	7.03	7.24	7.45	7.66	11
12	5.97	6.17	6.37	6.58	6.79	7.00	7.22	7.44	7.67	7.89	8.12	8.36	12
13	6.47	6.68	6.90	7.13	7.36	7.59	7.82	8.06	8.30	8.55	8.80	9.05	13
14	6.96	7.20	7.44	7.68	7.92	8.17	8.43	8.68	8.94	9.21	9.48	9.75	14
15	7.46	7.71	7.97	8.23	8.49	8.76	9.03	9.30	9.58	9.87	10.2	10.4	15
16	7.96	8.23	8.50	8.77	9.05	9.34	9.63	9.92	10.2	10.5	10.8	11.1	16
17	8.46	8.74	9.03	9.32	9.62	9.92	10.2	10.5	10.9	11.2	11.5	11.8	17
18	8.95	9.25	9.56	9.87	10.2	10.5	10.8	11.2	11.5	11.8	12.2	12.5	18
19	9.45	9.77	10.1	10.4	10.8	11.1	11.4	11.8	12.1	12.5	12.9	13.2	19
20	9.95	10.3	10.6	11.0	11.3	11.7	12.0	12.4	12.8	13.2	13.5	13.9	20
21	10.5	10.8	11.2	11.5	11.9	12.3	12.6	13.0	13.4	13.8	14.2	14.6	21
22	10.9	11.3	11.7	12.1	12.5	12.8	13.2	13.6	14.1	14.5	14.9	15.3	22
23	11.4	11.8	12.2	12.6	13.0	13.4	13.8	14.3	14.7	15.1	15.6	16.0	23
24	11.9	12.3	12.8	13.2	13.6	14.0	14.4	14.9	15.3	15.8	16.3	16.7	24
25	12.4	12.9	13.3	13.7	14.2	14.6	15.0	15.5	16.0	16.4	16.9	17.4	25
26	12.9	13.4	13.8	14.3	14.7	15.2	15.7	16.1	16.6	17.1	17.6	18.1	26
27	13.4	13.9	14.3	14.8	15.3	15.8	16.3	16.7	17.3	17.8	18.3	18.8	27
28	13.9	14.4	14.9	15.4	15.9	16.3	16.9	17.4	17.9	18.4	19.0	19.5	28
29	14.4	14.9	15.4	15.9	16.4	16.9	17.5	18.0	18.5	19.1	19.6	20.2	29
30	14.9	15.4	15.9	16.5	17.0	17.5	18.1	18.6	19.2	19.7	20.3	20.9	30
31	15.4	15.9	16.5	17.0	17.5	18.1	18.7	19.2	19.8	20.4	21.0	21.6	31
32	15.9	16.5	17.0	17.5	18.1	18.7	19.3	19.8	20.4	21.0	21.7	22.3	32
33	16.4	17.0	17.5	18.1	18.7	19.3	19.9	20.5	21.1	21.7	22.3	23.0	33
34	16.9	17.5	18.1	18.6	19.2	19.8	20.5	21.1	21.7	22.4	23.0	23.7	34
35	17.4	18.0	18.6	19.2	19.8	20.4	21.1	21.7	22.4	23.0	23.7	24.4	35
36	17.9	18.5	19.1	19.7	20.4	21.0	21.7	22.3	23.0	23.7	24.4	25.1	36
37	18.4	19.0	19.7	20.3	20.9	21.6	22.3	22.9	23.6	24.3	25.1	25.8	37
38	18.9	19.5	20.2	20.8	21.5	22.2	22.9	23.6	24.3	25.0	25.7	26.5	38
39	19.4	20.0	20.7	21.4	22.1	22.8	23.5	24.2	24.9	25.7	26.4	27.2	39
40	19.9	20.6	21.2	21.9	22.6	23.3	24.1	24.8	25.6	26.3	27.1	27.9	40
41	20.4	21.1	21.8	22.5	23.2	23.9	24.7	25.4	26.2	27.0	27.8	28.6	41
42	20.9	21.6	22.3	23.0	23.8	24.5	25.3	26.0	26.8	27.6	28.4	29.3	42
43	21.4	22.1	22.8	23.6	24.3	25.1	25.9	26.7	27.5	28.3	29.1	29.9	43
44	21.9	22.6	23.4	24.1	24.9	25.7	26.5	27.3	28.1	28.9	29.8	30.6	44
45	22.4	23.1	23.9	24.7	25.5	26.3	27.1	27.9	28.8	29.6	30.5	31.3	45

MID-GIRTH 3 ft. 0 in. to 3 ft. 5½ in.

Length Feet	0	½	1	1½	2	2½	3	3½	4	4½	5	5½	Length Feet
1	.716	.736	.757	.777	.798	.819	.841	.862	.884	.906	.929	.952	1
2	1.43	1.47	1.51	1.55	1.60	1.64	1.68	1.72	1.77	1.81	1.86	1.90	2
3	2.15	2.21	2.27	2.33	2.39	2.46	2.52	2.59	2.65	2.72	2.79	2.86	3
4	2.86	2.94	3.03	3.11	3.19	3.28	3.36	3.45	3.54	3.63	3.72	3.81	4
5	3.58	3.68	3.78	3.89	3.99	4.10	4.20	4.31	4.42	4.53	4.64	4.76	5
6	4.30	4.42	4.54	4.66	4.79	4.91	5.04	5.17	5.31	5.44	5.57	5.71	6
7	5.01	5.15	5.30	5.44	5.59	5.73	5.88	6.04	6.19	6.35	6.50	6.66	7
8	5.73	5.89	6.05	6.22	6.38	6.55	6.72	6.90	7.07	7.25	7.43	7.61	8
9	6.45	6.63	6.81	6.99	7.18	7.37	7.56	7.76	7.96	8.16	8.36	8.57	9
10	7.16	7.36	7.56	7.77	7.98	8.19	8.40	8.62	8.84	9.06	9.29	9.52	10
11	7.88	8.10	8.32	8.55	8.78	9.01	9.25	9.48	9.73	9.97	10.2	10.5	11
12	8.59	8.83	9.08	9.33	9.58	9.83	10.1	10.3	10.6	10.9	11.2	11.4	12
13	9.31	9.57	9.83	10.1	10.4	10.6	10.9	11.2	11.5	11.8	12.1	12.4	13
14	10.0	10.3	10.6	10.9	11.2	11.5	11.8	12.1	12.4	12.7	13.0	13.3	14
15	10.7	11.0	11.4	11.7	12.0	12.3	12.6	12.9	13.3	13.6	13.9	14.3	15
16	11.5	11.8	12.1	12.4	12.8	13.1	13.5	13.8	14.2	14.5	14.9	15.2	16
17	12.2	12.5	12.9	13.2	13.6	13.9	14.3	14.7	15.0	15.4	15.8	16.2	17
18	12.9	13.3	13.6	14.0	14.4	14.7	15.1	15.5	15.9	16.3	16.7	17.1	18
19	13.6	14.0	14.4	14.8	15.2	15.6	16.0	16.4	16.8	17.2	17.7	18.1	19
20	14.3	14.7	15.1	15.5	16.0	16.4	16.8	17.2	17.7	18.1	18.6	19.0	20
21	15.0	15.5	15.9	16.3	16.8	17.2	17.7	18.1	18.6	19.0	19.5	20.0	21
22	15.8	16.2	16.6	17.1	17.6	18.0	18.5	19.0	19.5	19.9	20.4	20.9	22
23	16.5	16.9	17.4	17.9	18.4	18.8	19.3	19.8	20.3	20.8	21.4	21.9	23
24	17.2	17.7	18.2	18.7	19.2	19.7	20.2	20.7	21.2	21.8	22.3	22.8	24
25	17.9	18.4	18.9	19.4	20.0	20.5	21.0	21.6	22.1	22.7	23.2	23.8	25
26	18.6	19.1	19.7	20.2	20.8	21.3	21.9	22.4	23.0	23.6	24.2	24.7	26
27	19.3	19.9	20.4	21.0	21.6	22.1	22.7	23.3	23.9	24.5	25.1	25.7	27
28	20.1	20.6	21.2	21.8	22.3	22.9	23.5	24.1	24.8	25.4	26.0	26.6	28
29	20.8	21.4	21.9	22.5	23.1	23.8	24.4	25.0	25.6	26.3	26.9	27.6	29
30	21.5	22.1	22.7	23.3	23.9	24.6	25.2	25.9	26.5	27.2	27.9	28.6	30
31	22.2	22.8	23.5	24.1	24.7	25.4	26.1	26.7	27.4	28.1	28.8	29.5	31
32	22.9	23.6	24.2	24.9	25.5	26.2	26.9	27.6	28.3	29.0	29.7	30.5	32
33	23.6	24.3	25.0	25.6	26.3	27.0	27.7	28.5	29.2	29.9	30.7	31.4	33
34	24.4	25.0	25.7	26.4	27.1	27.9	28.6	29.3	30.1	30.8	31.6	32.4	34
35	25.1	25.8	26.5	27.2	27.9	28.7	29.4	30.2	31.0	31.7	32.5	33.3	35
36	25.8	26.5	27.2	28.0	28.7	29.5	30.3	31.0	31.8	32.6	33.4	34.3	36
37	26.5	27.2	28.0	28.8	29.5	30.3	31.1	31.9	32.7	33.5	34.4	35.2	37
38	27.2	28.0	28.8	29.5	30.3	31.1	31.9	32.8	33.6	34.4	35.3	36.2	38
39	27.9	28.7	29.5	30.3	31.1	31.9	32.8	33.6	34.4	35.4	36.2	37.1	39
40	28.7	29.4	30.3	31.1	31.9	32.8	33.6	34.5	35.4	36.3	37.2	38.1	40
41	29.4	30.2	31.0	31.9	32.7	33.6	34.5	35.4	36.3	37.2	38.1	39.0	41
42	30.1	30.9	31.8	32.6	33.5	34.4	35.3	36.2	37.1	38.0	39.0	40.0	42
43	30.8	31.7	32.5	33.4	34.3	35.2	36.1	37.1	38.0	39.0	40.0	40.9	43
44	31.5	32.4	33.3	34.2	35.1	36.0	37.0	37.9	38.9	39.9	40.9	41.9	44
45	32.2	33.1	34.0	35.0	35.9	36.9	37.8	38.8	39.8	40.8	41.8	42.8	45

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MID-GIRTH 3 ft. 6 in. to 3 ft. 11 1/2 in.

Length Feet	6	6 1/2	7	7 1/2	8	8 1/2	9	9 1/2	10	10 1/2	11	11 1/2	Length Feet
1	.975	.998	1.02	1.05	1.07	1.09	1.12	1.14	1.17	1.19	1.22	1.25	1
2	1.95	2.00	2.04	2.09	2.14	2.19	2.24	2.29	2.34	2.39	2.44	2.49	2
3	2.92	2.99	3.07	3.14	3.21	3.28	3.36	3.43	3.51	3.58	3.66	3.74	3
4	3.90	3.99	4.09	4.18	4.28	4.38	4.48	4.58	4.68	4.78	4.88	4.99	4
5	4.87	4.99	5.11	5.23	5.35	5.47	5.60	5.72	5.85	5.97	6.10	6.23	5
6	5.85	5.99	6.13	6.27	6.42	6.57	6.71	6.86	7.02	7.17	7.32	7.48	6
7	6.82	6.99	7.15	7.32	7.49	7.66	7.83	8.01	8.19	8.36	8.55	8.73	7
8	7.80	7.99	8.17	8.37	8.56	8.75	8.95	9.15	9.35	9.56	9.77	9.97	8
9	8.77	8.98	9.20	9.41	9.63	9.85	10.1	10.3	10.5	10.8	11.0	11.2	9
10	9.75	9.98	10.2	10.5	10.7	10.9	11.2	11.4	11.7	11.9	12.2	12.5	10
11	10.7	11.0	11.2	11.5	11.8	12.0	12.3	12.6	12.9	13.1	13.4	13.7	11
12	11.7	12.0	12.3	12.5	12.8	13.1	13.4	13.7	14.0	14.3	14.7	15.0	12
13	12.7	13.0	13.3	13.6	13.9	14.2	14.6	14.9	15.2	15.5	15.9	16.2	13
14	13.7	14.0	14.3	14.6	15.0	15.3	15.7	16.0	16.4	16.7	17.1	17.5	14
15	14.6	15.0	15.3	15.7	16.1	16.4	16.8	17.2	17.6	17.9	18.3	18.7	15
16	15.6	16.0	16.4	16.7	17.1	17.5	17.9	18.3	18.7	19.1	19.5	19.9	16
17	16.6	17.0	17.4	17.8	18.2	18.6	19.0	19.4	19.9	20.3	20.8	21.2	17
18	17.6	18.0	18.4	18.8	19.3	19.7	20.1	20.6	21.1	21.5	22.0	22.4	18
19	18.5	19.0	19.4	19.9	20.3	20.8	21.3	21.7	22.2	22.7	23.2	23.7	19
20	19.5	20.0	20.4	20.9	21.4	21.9	22.4	22.9	23.4	23.9	24.4	24.9	20

21	20.5	21.0	21.5	22.0	22.5	23.0	23.5	24.0	24.6	25.1	25.6	26.2	21
22	21.5	22.0	22.5	23.0	23.5	24.1	24.6	25.2	25.7	26.3	26.9	27.4	22
23	22.4	23.0	23.5	24.1	24.6	25.1	25.7	26.3	26.9	27.5	28.1	28.7	23
24	23.4	24.0	24.5	25.1	25.7	26.3	26.9	27.5	28.1	28.7	29.3	29.9	24
25	24.4	25.0	25.5	26.1	26.8	27.4	28.0	28.6	29.2	29.9	30.5	31.2	25
26	25.3	26.0	26.6	27.2	27.8	28.5	29.1	29.7	30.4	31.1	31.7	32.4	26
27	26.3	27.0	27.6	28.2	28.9	29.5	30.2	30.9	31.6	32.3	33.0	33.7	27
28	27.3	27.9	28.6	29.3	30.0	30.6	31.3	32.0	32.7	33.5	34.2	34.9	28
29	28.3	28.9	29.6	30.3	31.0	31.7	32.5	33.2	33.9	34.7	35.4	36.2	29
30	29.2	29.9	30.7	31.4	32.1	32.8	33.6	34.3	35.1	35.8	36.6	37.4	30
31	30.2	30.9	31.7	32.4	33.2	33.9	34.7	35.5	36.3	37.0	37.8	38.7	31
32	31.2	31.9	32.7	33.5	34.2	35.0	35.8	36.6	37.4	38.2	39.1	39.9	32
33	32.2	32.9	33.7	34.5	35.3	36.1	36.9	37.8	38.6	39.4	40.3	41.1	33
34	33.1	33.9	34.7	35.6	36.4	37.2	38.1	38.9	39.8	40.6	41.5	42.4	34
35	34.1	34.9	35.8	36.6	37.5	38.3	39.2	40.0	40.9	41.8	42.7	43.6	35
36	35.1	35.9	36.8	37.6	38.5	39.4	40.3	41.2	42.1	43.0	44.0	44.9	36
37	36.1	36.9	37.8	38.7	39.6	40.5	41.4	42.3	43.3	44.2	45.2	46.1	37
38	37.0	37.9	38.8	39.7	40.7	41.6	42.5	43.5	44.4	45.4	46.4	47.4	38
39	38.0	38.9	39.9	40.8	41.7	42.7	43.6	44.6	45.6	46.6	47.6	48.6	39
40	39.0	39.9	40.9	41.8	42.8	43.8	44.8	45.8	46.8	47.8	48.8	49.9	40
41	40.0	40.9	41.9	42.9	43.9	44.9	45.9	46.9	47.9	49.0	50.1	51.1	41
42	40.9	41.9	42.9	43.9	44.9	46.0	47.1	48.1	49.1	50.2	51.3	52.4	42
43	41.9	42.9	43.9	45.0	46.0	47.1	48.1	49.2	50.3	51.4	52.5	53.6	43
44	42.9	43.9	45.0	46.0	47.1	48.2	49.2	50.3	51.5	52.6	53.7	54.9	44
45	43.9	44.9	46.0	47.1	48.2	49.2	50.4	51.5	52.6	53.8	54.9	56.1	45

MID-GIRTH 4 ft. 0 in. to 4 ft. 11 in.

Length Feet	0	1	2	3	4	5	6	7	8	9	10	11	Length Feet
10	12.7	13.3	13.8	14.4	14.9	15.5	16.1	16.7	17.3	18.0	18.6	19.2	10
11	14.0	14.6	15.2	15.8	16.4	17.1	17.7	18.4	19.1	19.8	20.5	21.2	11
12	15.3	15.9	16.6	17.3	17.9	18.6	19.3	20.1	20.8	21.6	22.3	23.1	12
13	16.6	17.3	18.0	18.7	19.4	20.2	21.0	21.7	22.5	23.3	24.2	25.0	13
14	17.8	18.6	19.3	20.1	20.9	21.7	22.6	23.4	24.3	25.1	26.0	26.9	14
15	19.1	19.9	20.7	21.6	22.4	23.3	24.2	25.1	26.0	26.9	27.9	28.9	15
16	20.4	21.2	22.1	23.0	23.9	24.8	25.8	26.8	27.7	28.7	29.7	30.8	16
17	21.6	22.6	23.5	24.4	25.4	26.4	27.4	28.4	29.5	30.5	31.6	32.7	17
18	22.9	23.9	24.9	25.9	26.9	27.9	29.0	30.1	31.2	32.3	33.5	34.6	18
19	24.2	25.2	26.3	27.3	28.4	29.5	30.6	31.8	32.9	34.1	35.3	36.6	19
20	25.5	26.5	27.6	28.8	29.9	31.1	32.2	33.4	34.7	35.9	37.2	38.5	20
21	26.7	27.9	29.0	30.2	31.4	32.6	33.8	35.1	36.4	37.7	39.0	40.4	21
22	28.0	29.2	30.4	31.6	32.9	34.2	35.5	36.8	38.1	39.5	40.9	42.3	22
23	29.3	30.5	31.8	33.1	34.4	35.7	37.1	38.5	39.9	41.3	42.8	44.3	23
24	30.6	31.8	33.2	34.5	35.9	37.3	38.7	40.1	41.6	43.1	44.6	46.2	24
25	31.8	33.2	34.5	35.9	37.4	38.8	40.3	41.8	43.3	44.9	46.5	48.1	25
26	33.1	34.5	35.9	37.4	38.9	40.4	41.9	43.5	45.1	46.7	48.3	50.0	26
27	34.3	35.8	37.3	38.8	40.4	41.9	43.5	45.1	46.8	48.5	50.2	51.9	27
28	35.7	37.2	38.7	40.3	41.8	43.5	45.1	46.8	48.5	50.3	52.1	53.9	28
29	36.9	38.5	40.1	41.7	43.3	45.0	46.7	48.5	50.3	52.1	53.9	55.8	29
30	38.2	39.8	41.5	43.1	44.8	46.6	48.3	50.2	52.0	53.9	55.8	57.7	30

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31	39.5	41.1	42.8	44.6	46.3	48.1	50.0	51.8	53.7	55.7	57.6	59.6	31
32	40.7	42.5	44.2	46.0	47.8	49.7	51.6	53.5	55.5	57.5	59.5	61.6	32
33	42.0	43.8	45.6	47.4	49.3	51.2	53.2	55.2	57.2	59.3	61.4	63.5	33
34	43.3	45.1	47.0	48.9	50.8	52.8	54.8	56.8	58.9	61.1	63.2	65.4	34
35	44.6	46.4	48.4	50.3	52.3	54.3	56.4	58.5	60.7	62.8	65.1	67.3	35
36	45.8	47.8	49.7	51.8	53.8	55.9	58.0	60.2	62.4	64.6	66.9	69.3	36
37	47.1	49.1	51.1	53.2	55.3	57.4	59.6	61.9	64.1	66.4	68.8	71.2	37
38	48.4	50.4	52.5	54.6	56.8	59.0	61.2	63.5	65.9	68.2	70.6	73.1	38
39	49.7	51.8	53.9	56.1	58.3	60.5	62.8	65.2	67.6	70.0	72.5	75.0	39
40	50.9	53.1	55.3	57.5	59.8	62.1	64.5	66.9	69.3	71.8	74.4	77.0	40
41	52.2	54.4	56.7	58.9	61.3	63.6	66.1	68.5	71.1	73.6	76.2	78.9	41
42	53.5	55.7	58.0	60.4	62.8	65.2	67.7	70.2	72.8	75.4	78.1	80.8	42
43	54.8	57.1	59.4	61.8	64.3	66.8	69.3	71.9	74.5	77.2	79.9	82.7	43
44	56.0	58.4	60.8	63.2	65.8	68.3	70.9	73.6	76.3	79.0	81.8	84.6	44
45	57.3	59.7	62.2	64.7	67.2	69.9	72.5	75.2	78.0	80.8	83.7	86.6	45
46	58.6	61.0	63.6	66.1	68.7	71.4	74.1	76.9	79.7	82.6	85.5	88.5	46
47	59.8	62.4	64.9	67.6	70.2	73.0	75.7	78.6	81.5	84.4	87.4	90.4	47
48	61.1	63.7	66.3	69.0	71.7	74.5	77.4	80.2	83.2	86.2	89.2	92.3	48
49	62.4	65.0	67.7	70.4	73.2	76.1	79.0	81.9	84.9	88.0	91.1	94.3	49
50	63.7	66.3	69.1	71.9	74.7	77.6	80.6	83.6	86.7	89.8	93.0	96.2	50
51	64.9	67.7	70.5	73.3	76.2	79.2	82.2	85.3	88.4	91.6	94.8	98.1	51
52	66.2	69.0	71.8	74.7	77.7	80.7	83.8	86.9	90.1	93.4	96.7	100	52
53	67.5	70.3	73.2	76.2	79.2	82.3	85.4	88.6	91.9	95.2	98.5	102	53
54	68.8	71.7	74.6	77.6	80.7	83.8	86.9	90.3	93.6	97.0	100	104	54
55	70.0	73.0	76.0	79.1	82.2	85.4	88.6	91.9	95.3	98.8	102	106	55

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MID-GIRTH 5 ft. 0 in. to 5 ft. 11 in.

Length Feet	0	1	2	3	4	5	6	7	8	9	10	11	Length Feet
10	19.9	20.6	21.2	21.9	22.6	23.4	24.1	24.8	25.6	26.3	27.1	27.9	10
11	21.9	22.6	23.4	24.1	24.9	25.7	26.5	27.3	28.1	28.9	29.8	30.6	11
12	23.9	24.7	25.5	26.3	27.2	28.0	28.9	29.8	30.7	31.6	32.5	33.4	12
13	25.9	26.7	27.6	28.5	29.4	30.4	31.3	32.3	33.2	34.2	35.2	36.2	13
14	27.9	28.8	29.7	30.7	31.7	32.7	33.7	34.7	35.8	36.8	37.9	39.0	14
15	29.8	30.8	31.9	32.9	34.0	35.0	36.1	37.2	38.3	39.5	40.6	41.8	15
16	31.8	32.9	34.0	35.1	36.2	37.4	38.5	39.7	40.9	42.1	43.3	44.6	16
17	33.8	35.0	36.1	37.3	38.5	39.7	40.9	42.2	43.4	44.7	46.0	47.4	17
18	35.8	37.0	38.2	39.5	40.7	42.0	43.3	44.7	46.0	47.4	48.7	50.1	18
19	37.8	39.1	40.4	41.7	43.0	44.4	45.7	47.1	48.5	50.0	51.5	52.9	19
20	39.8	41.1	42.5	43.9	45.3	46.7	48.1	49.6	51.1	52.6	54.2	55.7	20
21	41.8	43.2	44.6	46.1	47.5	49.0	50.6	52.1	53.7	55.3	56.9	58.5	21
22	43.8	45.2	46.7	48.3	49.8	51.4	53.0	54.6	56.2	57.9	59.6	61.3	22
23	45.8	47.3	48.9	50.5	52.1	53.7	55.4	57.1	58.8	60.5	62.3	64.1	23
24	47.8	49.4	51.0	52.6	54.3	56.0	57.8	59.5	61.3	63.1	65.0	66.9	24
25	49.7	51.4	53.1	54.8	56.6	58.4	60.2	62.0	63.9	65.8	67.7	69.6	25
26	51.7	53.5	55.2	57.0	58.9	60.7	62.6	64.5	66.4	68.4	70.4	72.4	26
27	53.7	55.5	57.4	59.2	61.1	63.0	65.0	67.0	69.0	71.0	73.1	75.2	27
28	55.7	57.6	59.5	61.4	63.4	65.4	67.4	69.5	71.6	73.7	75.8	78.0	28
29	57.7	59.6	61.6	63.6	65.6	67.7	69.8	71.9	74.1	76.3	78.5	80.8	29
30	59.7	61.7	63.7	65.8	67.9	70.0	72.2	74.4	76.7	78.9	81.2	83.6	30
31	61.7	63.8	65.9	68.0	70.2	72.4	74.6	76.9	79.2	81.6	83.9	86.4	31
32	63.7	65.8	68.0	70.2	72.4	74.7	77.0	79.4	81.8	84.2	86.7	89.2	32
33	65.7	67.9	70.1	72.4	74.7	77.1	79.4	81.9	84.3	86.8	89.4	91.9	33
34	67.6	69.9	72.2	74.6	77.0	79.4	81.8	84.3	86.9	89.5	92.1	94.7	34
35	69.6	72.0	74.4	76.8	79.2	81.7	84.3	86.8	89.4	92.1	94.8	97.5	35
36	71.6	74.0	76.5	79.0	81.5	84.1	86.7	89.3	92.0	94.7	97.5	100	36
37	73.6	76.1	78.6	81.2	83.8	86.4	89.1	91.8	94.6	97.4	100	103	37
38	75.6	78.1	80.7	83.4	86.0	88.7	91.5	94.3	97.1	100	103	106	38
39	77.6	80.2	82.9	85.5	88.3	91.1	93.9	96.8	99.7	103	106	109	39
40	79.6	82.3	85.0	87.7	90.5	93.4	96.3	99.2	102	105	108	111	40
41	81.6	84.3	87.1	89.9	92.8	95.7	98.7	102	105	108	111	114	41
42	83.6	86.4	89.2	92.1	95.1	98.1	101	104	107	111	114	117	42
43	85.5	88.4	91.3	94.3	97.3	100	104	107	110	113	116	120	43
44	87.5	90.5	93.5	96.5	99.6	103	106	109	112	116	119	123	44
45	89.5	92.5	95.6	98.7	102	105	108	111	115	118	122	125	45
46	91.5	94.6	97.7	101	104	107	111	114	118	121	125	128	46
47	93.5	96.7	99.8	103	106	110	113	117	120	124	127	131	47
48	95.5	98.7	102	105	109	112	116	119	123	126	130	134	48
49	97.5	101	104	107	111	114	118	122	125	129	133	137	49
50	99.5	103	106	110	113	117	120	124	128	132	135	139	50
51	101	105	108	112	115	119	123	127	130	134	138	142	51
52	103	107	110	114	118	121	125	129	133	137	141	145	52
53	105	109	113	116	120	124	128	131	135	139	144	148	53
54	107	111	115	118	122	126	130	134	138	142	146	150	54
55	109	113	117	121	124	128	132	136	141	145	149	153	55

MID-GIRTH 6 ft. 0 in. to 6 ft. 11 in.

Length Feet	0	1	2	3	4	5	6	7	8	9	10	11	Length Feet
10	28.7	29.5	30.3	31.1	31.9	32.8	33.6	34.5	35.4	36.3	37.2	38.1	10
11	31.5	32.4	33.3	34.2	35.1	36.0	37.0	37.9	38.9	39.9	40.9	41.9	11
12	34.4	35.3	36.3	37.3	38.3	39.3	40.4	41.4	42.4	43.5	44.6	45.7	12
13	37.2	38.3	39.3	40.4	41.5	42.6	43.7	44.8	46.0	47.1	48.3	49.5	13
14	40.1	41.2	42.4	43.5	44.7	45.9	47.1	48.3	49.5	50.8	52.0	53.3	14
15	43.0	44.2	45.4	46.6	47.9	49.2	50.4	51.7	53.1	54.4	55.7	57.1	15
16	45.8	47.1	48.4	49.7	51.1	52.4	53.8	55.2	56.6	58.0	59.5	60.9	16
17	48.7	50.1	51.5	52.8	54.3	55.7	57.2	58.6	60.1	61.6	63.2	64.7	17
18	51.6	53.0	54.5	56.0	57.5	59.0	60.5	62.1	63.7	65.3	66.9	68.5	18
19	54.4	56.0	57.5	59.1	60.7	62.3	63.9	65.5	67.2	68.9	70.6	72.3	19
20	57.3	58.9	60.5	62.2	63.8	65.5	67.2	69.0	70.7	72.5	74.3	76.1	20
21	60.2	61.8	63.6	65.3	67.0	68.8	70.6	72.4	74.3	76.1	78.0	80.0	21
22	63.0	64.8	66.6	68.4	70.2	72.1	74.0	75.9	77.8	79.8	81.8	83.8	22
23	65.9	67.7	69.6	71.5	73.4	75.4	77.3	79.3	81.4	83.4	85.5	87.6	23
24	68.8	70.7	72.6	74.6	76.6	78.6	80.7	82.8	84.9	87.0	89.2	91.4	24
25	71.6	73.6	75.7	77.7	79.8	81.9	84.1	86.2	88.4	90.6	92.9	95.2	25
26	74.5	76.6	78.7	80.8	83.0	85.2	87.4	89.7	92.0	94.3	96.6	99.0	26
27	77.4	79.5	81.7	83.9	86.2	88.5	90.8	93.1	95.5	97.9	100	103	27
28	80.2	82.5	84.7	87.0	89.4	91.7	94.1	96.6	99.0	102	104	107	28
29	83.1	85.4	87.8	90.2	92.6	95.0	97.5	100	103	105	108	110	29
30	85.9	88.4	90.8	93.3	95.8	98.3	101	103	106	109	111	114	30
31	88.8	91.3	93.8	96.4	99.0	102	104	107	110	112	115	118	31
32	91.7	94.2	96.8	99.5	102	105	108	110	113	116	119	122	32
33	94.5	97.1	99.9	103	106	108	111	114	117	120	123	126	33
34	97.4	100	103	106	109	111	114	117	120	123	126	129	34
35	100	103	106	109	112	115	118	121	124	127	130	133	35
36	103	106	109	112	115	118	121	124	127	131	134	137	36
37	106	109	112	115	118	121	124	128	131	134	137	141	37
38	109	112	115	118	121	125	128	131	134	138	141	145	38
39	112	115	118	121	124	128	131	135	138	141	145	148	39
40	115	118	121	124	128	131	134	138	141	145	149	152	40
41	117	121	124	127	131	134	138	141	145	149	152	156	41
42	120	124	127	131	134	138	141	145	149	152	156	160	42
43	123	127	130	134	137	141	145	148	152	156	160	164	43
44	126	130	133	137	140	144	148	152	156	160	164	168	44
45	129	133	136	140	144	147	151	155	159	163	167	171	45
46	132	135	139	143	147	151	155	159	163	167	171	175	46
47	135	138	142	146	150	154	158	162	166	170	174	179	47
48	138	141	145	149	153	157	161	166	170	174	178	183	48
49	140	144	148	152	156	161	165	169	173	178	182	187	49
50	143	147	151	155	160	164	168	172	177	181	186	190	50
51	146	150	154	159	163	167	171	176	180	185	190	194	51
52	149	153	157	162	166	170	175	179	184	189	193	198	52
53	152	156	160	165	169	174	178	183	187	192	197	202	53
54	155	159	163	168	172	177	182	186	191	196	201	206	54
55	158	162	166	171	176	180	185	190	195	199	204	209	55

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25

MID-GIRTH 7 ft. 0 in. to 7 ft. 11 in.

Length Feet	0	1	2	3	4	5	6	7	8	9	10	11	Length Feet
10	39-0	39-9	40-9	41-8	42-8	43-8	44-8	45-8	46-8	47-8	48-8	49-9	10
11	42-9	43-9	45-0	46-0	47-1	48-2	49-2	50-3	51-5	52-6	53-7	54-9	11
12	46-8	47-9	49-1	50-2	51-4	52-5	53-7	54-9	56-1	57-4	58-6	59-9	12
13	50-7	51-9	53-1	54-4	55-6	56-9	58-2	59-5	60-8	62-1	63-5	64-8	13
14	54-6	55-9	57-2	58-6	59-9	61-3	62-7	64-1	65-5	66-9	68-4	69-8	14
15	58-5	59-9	61-3	62-7	64-2	65-7	67-1	68-6	70-2	71-7	73-3	74-8	15
16	62-4	63-9	65-4	66-9	68-5	70-0	71-6	73-2	74-8	76-5	78-1	79-8	16
17	66-3	67-9	69-5	71-1	72-8	74-4	76-1	77-8	79-5	81-3	83-0	84-8	17
18	70-2	71-9	73-6	75-3	77-0	78-8	80-6	82-4	84-2	86-0	87-9	89-8	18
19	74-1	75-9	77-7	79-5	81-3	83-2	85-1	87-0	88-9	90-8	92-8	94-8	19
20	78-0	79-9	81-7	83-7	85-6	87-6	89-5	91-5	93-6	95-6	97-7	99-8	20
21	81-9	83-9	85-8	87-8	89-9	91-9	94-0	96-1	98-2	100	103	105	21
22	85-8	87-8	89-9	92-0	94-2	96-3	98-5	101	103	105	107	110	22
23	89-7	91-8	94-0	96-2	98-4	101	103	105	108	110	112	115	23
24	93-6	95-8	98-1	100	103	105	107	110	112	115	117	120	24
25	97-5	99-8	102	105	107	109	112	114	117	119	122	125	25
26	101	104	106	109	111	114	116	119	122	124	127	130	26
27	105	108	110	113	116	118	121	124	126	129	132	135	27
28	109	112	114	117	120	123	125	128	131	134	137	140	28
29	113	116	119	121	124	127	130	133	136	139	142	145	29
30	117	120	123	125	128	131	134	137	140	143	146	150	30
31	121	124	127	130	133	136	139	142	145	148	151	155	31
32	125	128	131	134	137	140	143	146	150	153	156	160	32
33	129	132	135	138	141	144	148	151	154	158	161	165	33
34	133	136	139	142	146	149	152	156	159	163	166	170	34
35	136	140	143	146	150	153	157	160	164	167	171	175	35
36	140	144	147	151	154	158	161	165	168	172	176	180	36
37	144	148	151	155	158	162	166	169	173	177	181	185	37
38	148	152	155	159	163	166	170	174	178	182	186	190	38
39	152	156	159	163	167	171	175	178	182	186	190	195	39
40	156	160	163	167	171	175	179	183	187	191	195	200	40
41	160	164	168	171	175	179	184	188	192	196	200	204	41
42	164	168	172	176	180	184	188	192	196	201	205	209	42
43	168	172	176	180	184	188	192	197	201	206	210	214	43
44	172	176	180	184	188	193	197	201	206	210	215	219	44
45	175	180	184	188	193	197	201	206	210	215	220	224	45
46	179	184	188	192	197	201	206	211	215	220	225	229	46
47	183	188	192	197	201	206	210	215	220	225	230	234	47
48	187	192	196	201	205	210	215	220	225	229	234	239	48
49	191	196	200	205	210	214	219	224	229	234	239	244	49
50	195	200	204	209	214	219	224	229	234	239	244	249	50
51	199	204	208	213	218	223	228	233	238	244	249	254	51
52	203	208	213	218	223	228	233	238	243	249	254	259	52
53	207	212	217	222	227	232	237	243	248	253	259	264	53
54	211	216	221	226	231	236	242	247	253	258	264	269	54
55	214	220	225	230	235	241	246	252	257	263	269	274	55

MID-GIRTH 8 ft. 0 in. to 8 ft. 11 in.

Length Feet	0	1	2	3	4	5	6	7	8	9	10	11	Length Feet
10	50.9	52.0	53.1	54.2	55.3	56.4	57.5	58.6	59.8	60.9	62.1	63.3	10
11	56.0	57.2	58.4	59.6	60.8	62.0	63.2	64.5	65.8	67.0	68.3	69.6	11
12	61.1	62.4	63.7	65.0	66.3	67.7	69.0	70.4	71.7	73.1	74.5	75.9	12
13	66.2	67.6	69.0	70.4	71.8	73.3	74.7	76.2	77.7	79.2	80.7	82.3	13
14	71.3	72.8	74.3	75.8	77.4	78.9	80.5	82.1	83.7	85.3	86.9	88.6	14
15	76.4	78.0	79.6	81.2	82.9	84.6	86.2	87.9	89.7	91.4	93.1	94.9	15
16	81.5	83.2	84.9	86.7	88.4	90.2	92.0	93.8	95.6	97.5	99.4	101	16
17	86.6	88.4	90.2	92.1	94.0	95.8	97.7	99.7	102	104	106	108	17
18	91.7	93.6	95.5	97.5	99.5	101	103	106	108	110	112	114	18
19	96.8	98.8	101	103	105	107	109	111	114	116	118	120	19
20	102	104	106	108	111	113	115	117	120	122	124	127	20
21	107	109	111	114	116	118	121	123	126	128	130	133	21
22	112	114	117	119	122	124	126	129	132	134	137	139	22
23	117	120	122	125	127	130	132	135	137	140	143	146	23
24	122	125	127	130	133	135	138	141	143	146	149	152	24
25	127	130	133	135	138	141	144	147	149	152	155	158	25
26	132	135	138	141	144	147	149	152	155	158	161	165	26
27	138	140	143	146	149	152	155	158	161	165	168	171	27
28	143	146	149	152	155	158	161	164	167	171	174	177	28
29	148	151	154	157	160	163	167	170	173	177	180	183	29
30	153	156	159	162	166	169	172	176	179	183	186	190	30
31	158	161	165	168	171	175	178	182	185	189	192	196	31
32	163	166	170	173	177	180	184	188	191	195	199	202	32
33	168	172	175	179	182	186	190	193	197	201	205	209	33
34	173	177	180	184	188	192	195	199	203	207	211	215	34
35	178	182	186	190	193	197	201	205	209	213	217	221	35
36	183	187	191	195	199	203	207	211	215	219	224	228	36
37	188	192	196	200	204	209	213	217	221	225	230	234	37
38	194	198	202	206	210	214	218	223	227	232	236	240	38
39	199	203	207	211	216	220	224	229	233	238	242	247	39
40	204	208	212	217	221	225	230	235	239	244	248	253	40
41	209	213	218	222	227	231	236	240	245	250	255	259	41
42	214	218	223	227	232	237	241	246	251	256	261	266	42
43	219	224	228	233	238	242	247	252	257	262	267	272	43
44	224	229	234	238	243	248	253	258	263	268	273	278	44
45	229	234	239	244	249	254	259	264	269	274	279	285	45
46	234	239	244	249	254	259	264	270	275	280	286	291	46
47	239	244	249	255	260	265	270	276	281	286	292	297	47
48	244	250	255	260	265	271	276	281	287	292	298	304	48
49	250	255	260	265	271	276	282	287	293	299	304	310	49
50	255	260	265	271	276	282	287	293	299	305	310	316	50
51	260	265	271	276	282	288	293	299	305	311	317	323	51
52	265	270	276	282	287	293	299	305	311	317	323	329	52
53	270	276	281	287	293	299	305	311	317	323	329	335	53
54	275	281	287	292	298	304	310	317	323	329	335	342	54
55	280	286	292	298	304	310	316	322	329	335	342	348	55

MID-GIRTH 9 ft. 0 in. to 9 ft. 11 in.

Length Feet	0	1	2	3	4	5	6	7	8	9	10	11	Length Feet
10	64.5	65.7	66.9	68.1	69.3	70.6	71.8	73.1	74.4	75.7	77.0	78.3	10
11	70.9	72.2	73.6	74.9	76.3	77.6	79.0	80.4	81.8	83.2	84.6	86.1	11
12	77.4	78.8	80.2	81.7	83.2	84.7	86.2	87.7	89.2	90.8	92.3	93.9	12
13	83.8	85.4	86.9	88.5	90.1	91.7	93.4	95.0	96.7	98.3	100	102	13
14	90.2	91.9	93.6	95.3	97.1	98.8	101	102	104	106	108	110	14
15	96.7	98.5	100	102	104	106	108	110	112	113	115	117	15
16	103	105	107	109	111	113	115	117	119	121	123	125	16
17	110	112	114	116	118	120	122	124	126	129	131	133	17
18	116	118	120	123	125	127	129	132	134	136	139	141	18
19	122	125	127	129	132	134	136	139	141	144	146	149	19
20	129	131	134	136	139	141	144	146	149	151	154	157	20
21	135	138	140	143	146	148	151	153	156	159	162	164	21
22	142	144	147	150	153	155	158	161	164	166	169	172	22
23	148	151	154	157	159	162	165	168	171	174	177	180	23
24	155	158	160	163	166	169	172	175	178	182	185	188	24
25	161	164	167	170	173	176	180	183	186	189	192	196	25
26	168	171	174	177	180	183	187	190	193	197	200	203	26
27	174	177	181	184	187	191	194	197	201	204	208	211	27
28	180	184	187	191	194	198	201	205	208	212	215	219	28
29	187	190	194	197	201	205	208	212	216	219	223	227	29
30	193	197	201	204	208	212	215	219	223	227	231	235	30
31	200	204	207	211	215	219	223	227	231	235	239	243	31
32	206	210	214	218	222	226	230	234	238	242	246	250	32
33	213	217	221	225	229	233	237	241	245	250	254	258	33
34	219	223	227	232	236	240	244	248	253	257	262	266	34
35	226	230	234	238	243	247	251	256	260	265	269	274	35
36	232	236	241	245	250	254	259	263	268	272	277	282	36
37	238	243	247	252	256	261	266	270	275	280	285	289	37
38	245	250	254	259	263	268	273	278	283	287	292	297	38
39	251	256	261	266	270	275	280	285	290	295	300	305	39
40	258	263	267	272	277	282	287	292	297	303	308	313	40
41	264	269	274	279	284	289	294	300	305	310	315	321	41
42	271	276	281	286	291	296	302	307	312	318	323	329	42
43	277	282	288	293	298	303	309	314	320	325	331	337	43
44	284	289	294	300	305	310	316	322	327	333	339	344	44
45	290	295	301	306	312	318	323	329	335	340	346	352	45
46	297	302	308	313	319	325	330	336	342	348	354	360	46
47	303	309	314	320	326	332	338	344	350	356	362	368	47
48	309	315	321	327	333	339	345	351	357	363	369	376	48
49	316	322	328	334	340	346	352	358	364	371	377	383	49
50	322	328	334	340	347	353	359	365	372	378	385	391	50
51	329	335	341	347	354	360	366	373	379	386	392	399	51
52	335	341	348	354	360	367	373	380	387	393	400	407	52
53	342	348	354	361	367	374	381	387	394	401	408	415	53
54	348	355	361	368	374	381	388	395	402	409	416	423	54
55	355	361	368	374	381	388	395	402	409	416	423	430	55

MID-GIRTH 10 ft. 0 in. to 10 ft. 11 in.

Length Feet	0	1	2	3	4	5	6	7	8	9	10	11	Length Feet
10	79-6	80-9	82-3	83-6	85-0	86-4	87-7	89-1	90-5	92-0	93-4	94-8	10
11	87-5	89-0	90-5	92-0	93-5	95-0	96-5	98-1	99-6	101	103	104	11
12	96-5	97-1	98-7	100	102	104	105	107	109	110	112	114	12
13	103	105	107	108	110	112	114	116	118	120	121	123	13
14	111	113	115	117	119	121	123	125	127	129	131	133	14
15	119	121	123	125	127	130	132	134	136	138	140	142	15
16	127	129	132	134	136	138	140	143	145	147	149	152	16
17	135	138	140	142	144	147	149	152	154	156	159	161	17
18	143	146	148	150	153	155	158	160	163	166	168	171	18
19	151	154	156	159	161	164	167	169	172	175	177	180	19
20	159	162	165	167	170	173	175	178	181	184	187	190	20
21	167	170	173	176	178	181	184	187	190	193	196	199	21
22	175	178	181	184	187	190	193	196	199	202	205	209	22
23	183	186	189	192	195	199	202	205	208	212	215	218	23
24	191	194	197	201	204	207	211	214	217	221	224	228	24
25	199	202	206	209	212	216	219	223	226	230	233	237	25
26	207	210	214	217	221	225	228	233	235	239	243	247	26
27	215	218	222	226	229	233	237	241	244	249	252	256	27
28	223	227	230	234	238	242	246	250	254	257	262	266	28
29	231	235	239	242	246	250	254	258	263	267	271	275	29
30	239	243	247	251	255	259	263	267	272	276	280	285	30
31	247	251	255	259	263	268	272	276	281	285	290	294	31
32	255	259	263	268	272	276	281	285	290	294	299	303	32
33	263	267	271	276	280	285	290	294	299	303	308	313	33
34	271	275	280	284	289	294	298	303	308	313	318	322	34
35	279	283	288	293	297	302	307	312	317	322	327	332	35
36	286	291	296	301	306	311	316	321	326	331	336	341	36
37	294	299	304	309	314	319	325	330	335	340	346	351	37
38	302	307	313	318	323	328	333	339	344	349	355	360	38
39	310	316	321	326	331	337	342	348	353	359	364	370	39
40	318	324	329	334	340	345	351	357	362	368	374	379	40
41	326	332	337	343	348	354	360	365	371	377	383	389	41
42	334	340	345	351	357	363	368	374	380	386	392	398	42
43	342	348	354	360	365	371	377	383	389	395	402	408	43
44	350	356	362	368	374	380	386	392	398	405	411	417	44
45	358	364	370	376	382	389	395	401	407	414	420	427	45
46	366	372	378	385	391	397	404	410	416	423	430	436	46
47	374	380	387	393	399	406	412	419	426	432	439	446	47
48	382	388	395	401	408	414	421	428	435	441	448	455	48
49	390	396	403	410	416	423	430	437	444	451	458	465	49
50	398	405	411	418	425	432	439	446	453	460	467	474	50
51	406	413	419	426	433	440	447	455	462	469	476	484	51
52	414	421	428	435	442	449	456	463	471	478	486	493	52
53	422	429	436	443	450	458	465	472	480	487	495	503	53
54	430	437	444	451	459	466	474	481	489	497	504	512	54
55	438	445	452	460	467	475	483	490	498	506	514	522	55

MID-GIRTH 11 ft. 0 in. to 11 ft. 11 in.

Length Feet	0	1	2	3	4	5	6	7	8	9	10	11	Length Feet
10	96-3	97-8	99-2	101	102	104	105	107	108	110	111	113	10
11	106	108	109	111	112	114	116	117	119	121	123	124	11
12	116	117	119	121	123	124	126	128	130	132	134	136	12
13	125	127	129	131	133	135	137	139	141	143	145	147	13
14	135	137	139	141	143	145	147	149	152	154	156	158	14
15	144	147	149	151	153	156	158	160	162	165	167	170	15
16	154	156	159	161	164	166	168	171	173	176	178	181	16
17	164	166	169	171	174	176	179	182	184	187	189	192	17
18	173	176	179	181	184	187	189	192	195	198	201	203	18
19	183	186	189	191	194	197	200	203	206	209	212	215	19
20	193	196	198	201	204	207	210	214	217	220	223	226	20
21	202	205	208	212	215	218	221	224	227	231	234	237	21
22	212	215	218	222	225	228	232	235	238	242	245	249	22
23	221	225	228	232	235	239	242	245	249	253	256	260	23
24	231	235	238	242	245	249	253	256	260	264	267	271	24
25	241	244	248	252	256	259	263	267	271	275	279	283	25
26	250	254	258	262	266	270	274	278	282	286	290	294	26
27	260	264	268	272	276	280	284	288	292	297	301	305	27
28	270	274	278	282	286	290	295	299	303	308	312	316	28
29	279	283	288	292	296	301	305	310	314	319	323	328	29
30	289	293	298	302	307	311	316	320	325	330	334	339	30
31	299	303	308	312	317	322	326	331	336	341	345	350	31
32	308	313	318	322	327	332	337	342	347	352	357	362	32
33	316	323	327	332	337	342	348	352	357	363	368	373	33
34	327	332	337	342	348	353	358	363	368	374	379	384	34
35	337	342	347	353	358	363	368	374	379	385	390	396	35
36	347	352	357	363	368	373	379	384	390	396	401	407	36
37	356	362	367	373	378	384	389	395	401	407	412	418	37
38	366	371	377	383	388	394	400	406	412	417	423	429	38
39	376	381	387	393	399	405	410	416	422	428	435	441	39
40	385	391	397	403	409	415	421	427	433	439	446	452	40
41	395	401	407	413	419	425	431	438	444	450	457	463	41
42	404	411	417	423	429	436	442	448	455	461	468	475	42
43	414	420	427	433	440	446	453	459	466	472	479	486	43
44	424	430	437	443	450	456	463	470	477	483	490	497	44
45	433	440	447	453	460	467	474	480	487	494	501	509	45
46	443	450	456	463	470	477	484	491	498	505	513	520	46
47	453	459	466	473	480	487	495	502	509	516	524	531	47
48	462	469	476	483	491	498	505	513	520	527	535	542	48
49	472	479	486	494	501	508	516	523	531	538	546	554	49
50	481	489	496	504	511	519	526	534	542	549	557	565	50
51	491	499	506	514	521	529	537	545	552	560	568	576	51
52	501	508	516	524	532	539	547	555	563	571	579	588	52
53	510	518	526	534	542	550	558	566	574	582	591	599	53
54	520	528	536	544	552	560	568	577	585	593	602	610	54
55	530	538	546	554	562	570	579	587	596	604	613	622	55

MID-GIRTH 12 ft. 0 in. to 12 ft. 11 in.

Length Feet	0	1	2	3	4	5	6	7	8	9	10	11	Length Feet
10	115	116	118	119	121	123	124	126	128	129	131	133	10
11	128	128	130	131	133	135	137	139	140	142	144	146	11
12	138	139	141	143	145	147	149	151	153	155	157	159	12
13	149	151	153	155	157	159	162	164	166	168	170	173	13
14	160	163	165	167	169	172	174	176	179	181	183	186	14
15	172	174	177	179	182	184	187	189	192	194	197	199	15
16	183	186	188	191	194	196	199	202	204	207	210	212	16
17	195	198	200	203	206	209	211	214	217	220	223	226	17
18	206	209	212	215	218	221	224	227	230	233	236	239	18
19	218	221	224	227	230	233	236	239	243	246	249	252	19
20	229	232	236	239	242	245	249	252	255	259	262	266	20
21	241	244	247	251	254	258	261	265	268	272	275	279	21
22	252	256	259	263	266	270	274	277	281	285	288	292	22
23	264	267	271	275	278	282	286	290	294	298	301	306	23
24	275	279	283	287	291	294	298	302	306	310	315	319	24
25	286	290	294	299	303	307	311	315	319	323	328	332	25
26	298	302	306	310	315	319	323	328	332	336	341	345	26
27	309	314	318	322	327	331	336	340	345	349	354	358	27
28	321	325	330	334	339	344	348	353	358	362	367	372	28
29	332	337	342	346	351	356	361	365	370	375	380	385	29
30	344	349	353	358	363	368	373	378	383	388	393	398	30
31	355	360	365	370	375	380	385	391	396	401	406	412	31
32	367	372	377	382	387	393	398	403	409	414	419	425	32
33	378	383	389	394	399	405	410	416	421	427	433	438	33
34	390	395	401	406	412	417	423	428	434	440	446	451	34
35	401	407	412	418	424	429	435	441	447	453	459	465	35
36	413	418	424	430	436	442	448	454	460	466	472	478	36
37	424	430	436	442	448	454	460	466	472	479	485	491	37
38	435	442	448	454	460	466	472	479	485	492	498	505	38
39	447	453	459	466	472	478	485	491	498	505	511	518	39
40	458	465	471	478	484	491	497	504	511	517	524	531	40
41	470	476	483	490	496	503	510	517	523	530	537	544	41
42	481	488	495	502	508	515	522	529	536	543	550	558	42
43	493	500	507	513	521	528	535	542	549	556	564	571	43
44	504	511	518	525	533	540	547	554	562	569	577	584	44
45	516	523	530	537	545	552	560	567	575	582	590	597	45
46	527	534	542	549	557	564	572	580	587	595	603	611	46
47	539	546	554	561	569	577	584	592	600	608	616	624	47
48	550	558	565	573	581	589	597	605	613	621	629	637	48
49	562	569	577	585	593	601	609	617	626	634	642	651	49
50	573	581	589	597	605	613	622	630	638	647	655	664	50
51	584	593	601	609	617	626	634	643	651	660	668	677	51
52	596	604	613	621	629	638	647	655	664	673	682	690	52
53	607	616	624	633	642	650	659	668	677	686	695	704	53
54	619	627	636	645	654	663	671	680	689	699	708	717	54
55	630	639	648	657	666	675	684	693	702	712	721	730	55

MID-GIRTH 13 ft. 0 in. to 13 ft. 11 in.

Length Feet	0	1	2	3	4	5	6	7	8	9	10	11	Length Feet
10	134	136	138	140	141	143	145	147	149	150	152	154	10
11	148	150	152	154	156	158	160	162	164	166	168	170	11
12	161	163	166	168	170	172	174	176	178	181	183	185	12
13	175	177	179	182	184	186	189	191	193	196	198	200	13
14	188	191	193	196	198	201	203	206	208	211	213	216	14
15	202	204	207	210	212	215	218	220	223	226	228	231	15
16	215	218	221	224	226	229	232	235	238	241	244	247	16
17	229	232	235	238	241	244	247	250	253	256	259	262	17
18	242	245	248	251	255	258	261	264	268	271	274	277	18
19	256	259	262	265	269	272	276	279	282	286	289	293	19
20	269	272	276	279	283	286	290	294	297	301	305	308	20
21	282	286	290	293	297	301	305	308	312	316	320	324	21
22	296	300	304	307	311	315	319	323	327	331	335	339	22
23	309	313	317	321	325	329	334	338	342	346	350	354	23
24	323	327	331	335	340	344	348	352	357	361	365	370	24
25	336	341	345	349	354	358	363	367	372	376	381	385	25
26	350	354	359	363	368	372	377	382	386	391	396	401	26
27	363	368	372	377	382	387	392	396	401	406	411	416	27
28	377	381	386	391	396	401	406	411	416	421	426	432	28
29	390	395	400	405	410	415	421	426	431	436	442	447	29
30	403	409	414	419	424	430	435	440	446	451	457	462	30
31	417	422	428	433	439	444	450	455	461	466	472	478	31
32	430	436	441	447	453	458	464	470	476	481	487	493	32
33	444	450	455	461	467	473	479	485	490	496	503	509	33
34	457	463	469	475	481	487	493	499	505	512	518	524	34
35	471	477	483	489	495	501	508	514	520	527	533	539	35
36	484	490	497	503	509	516	522	529	535	542	548	555	36
37	498	504	510	517	523	530	537	543	550	557	563	570	37
38	511	518	524	531	538	544	551	558	565	572	579	586	38
39	525	531	538	545	552	559	566	573	580	587	594	601	39
40	538	545	552	559	566	573	580	587	595	602	609	616	40
41	551	558	566	573	580	587	595	602	609	617	624	632	41
42	565	572	579	587	594	602	609	617	624	632	640	647	42
43	578	586	593	601	608	616	624	631	639	647	655	663	43
44	592	599	607	615	622	630	638	646	654	662	670	678	44
45	605	613	621	629	637	645	653	661	669	677	685	694	45
46	619	627	635	643	651	659	667	675	684	692	700	709	46
47	632	640	648	657	665	673	682	690	699	707	716	724	47
48	646	654	662	671	679	688	696	705	713	722	731	740	48
49	659	667	676	685	693	702	711	719	728	737	746	755	49
50	672	681	690	699	707	716	725	734	743	752	761	771	50
51	686	695	704	713	722	731	740	749	758	767	777	786	51
52	699	708	717	726	736	745	754	764	773	782	792	801	52
53	713	722	731	740	750	759	769	773	788	797	807	817	53
54	726	736	745	754	764	774	783	793	803	812	822	832	54
55	740	749	759	768	778	788	793	808	817	827	838	848	55

MID-GIRTH 14 ft. 0 in. to 14 ft. 11 in.

Length Feet	0	1	2	3	4	5	6	7	8	9	10	11	Length Feet
10	156	158	160	162	163	165	167	169	171	173	175	177	10
11	172	174	176	178	180	182	184	186	189	190	193	195	11
12	187	189	192	194	196	198	201	203	205	208	210	212	12
13	203	205	208	210	213	215	218	220	223	225	228	230	13
14	218	221	224	226	229	232	234	237	240	242	245	248	14
15	234	237	240	242	245	248	251	254	257	260	263	266	15
16	250	253	256	259	262	265	268	271	274	277	280	283	16
17	265	268	272	275	278	281	284	288	291	294	298	301	17
18	281	284	287	291	294	298	301	305	308	312	315	319	18
19	296	300	303	307	311	314	318	322	325	329	333	336	19
20	312	316	319	323	327	331	335	338	342	346	350	354	20
21	328	331	335	339	343	347	351	355	359	364	368	372	21
22	343	347	351	356	360	364	368	372	377	381	385	390	22
23	359	363	367	372	376	380	385	389	394	398	403	407	23
24	374	379	383	388	392	397	402	406	411	416	420	425	24
25	390	395	399	404	409	413	418	423	428	433	438	443	25
26	406	410	415	420	425	430	435	440	445	450	455	460	26
27	421	426	431	436	441	447	452	457	462	467	473	478	27
28	437	442	447	452	458	463	468	474	479	485	490	496	28
29	452	458	463	469	474	480	485	491	496	502	508	513	29
30	468	474	479	485	490	496	502	508	514	519	525	531	30
31	484	489	495	501	507	513	519	525	531	537	543	549	31
32	499	505	511	517	523	529	535	542	548	554	560	567	32
33	515	521	527	533	540	546	552	558	565	571	578	584	33
34	530	537	543	549	556	562	569	575	582	589	595	602	34
35	546	552	559	566	572	579	586	592	599	606	613	620	35
36	562	568	575	582	589	595	602	609	616	623	630	637	36
37	577	584	591	598	605	612	619	626	633	641	648	655	37
38	593	600	607	614	621	629	636	643	650	658	665	673	38
39	608	616	623	630	638	645	653	660	668	675	683	691	39
40	624	631	639	646	654	662	669	677	685	693	700	708	40
41	639	647	655	663	670	678	686	694	702	710	718	726	41
42	655	663	671	679	687	695	703	711	719	727	735	744	42
43	671	679	687	695	703	711	719	728	736	744	753	761	43
44	686	694	703	711	719	728	736	745	753	762	770	779	44
45	702	710	719	727	736	744	753	762	770	779	788	797	45
46	717	726	735	743	752	761	770	779	787	796	805	815	46
47	733	742	751	759	768	777	786	795	805	814	823	832	47
48	749	758	767	776	785	794	803	812	822	831	840	848	48
49	764	773	783	792	801	810	820	829	839	848	858	868	49
50	780	789	799	808	817	827	837	846	856	866	875	885	50
51	795	805	815	824	834	844	853	863	873	883	893	903	51
52	811	821	830	840	850	860	870	880	890	900	910	921	52
53	827	837	846	856	866	877	887	897	907	918	928	938	53
54	842	852	862	873	883	893	903	914	924	935	946	956	54
55	858	868	878	889	899	910	920	931	941	952	963	974	55

MID-GIRTH 15 ft. 0 in. to 15 ft. 11 in.

Length Feet	0	1	2	3	4	5	6	7	8	9	10	11	Length Feet
10	179	181	183	185	187	189	191	193	195	197	200	202	10
11	197	199	201	204	206	208	210	213	215	217	219	222	11
12	215	217	220	222	225	227	229	232	234	237	239	242	12
13	233	235	238	241	243	246	249	251	254	257	259	262	13
14	251	253	256	259	262	265	268	271	273	276	279	282	14
15	269	272	275	278	281	284	287	290	293	296	299	302	15
16	286	290	293	296	299	303	306	309	313	316	319	323	16
17	304	308	311	315	318	322	325	329	332	336	339	343	17
18	322	326	329	333	337	340	344	348	352	355	359	363	18
19	340	344	348	352	355	359	363	367	371	375	379	383	19
20	358	362	366	370	374	378	382	386	391	395	399	403	20
21	376	380	384	389	393	397	401	406	410	415	419	423	21
22	394	398	403	407	412	416	421	425	430	434	439	444	22
23	412	416	421	426	430	435	440	444	449	454	459	464	23
24	430	435	439	444	449	454	459	464	469	474	479	484	24
25	448	453	458	463	468	473	478	483	488	494	499	504	25
26	466	471	476	481	486	492	497	502	508	513	519	524	26
27	483	489	494	500	505	511	516	522	527	533	539	544	27
28	501	507	513	518	524	530	535	541	547	553	559	564	28
29	519	525	531	537	543	548	554	560	566	572	578	585	29
30	537	543	549	555	561	567	574	580	586	592	598	605	30
31	555	561	567	574	580	586	593	599	605	612	618	625	31
32	573	579	586	592	599	605	612	618	625	632	638	645	32
33	591	597	604	611	617	624	631	638	645	651	658	665	33
34	609	616	622	629	636	643	650	657	664	671	678	685	34
35	627	634	641	648	655	662	669	676	684	691	698	706	35
36	645	652	659	666	674	681	688	696	703	711	718	726	36
37	662	670	677	685	692	700	707	715	723	730	738	746	37
38	680	688	696	703	711	719	727	734	742	750	758	766	38
39	698	706	714	722	730	738	746	754	762	770	778	786	39
40	716	724	732	740	748	757	765	773	781	790	798	806	40
41	734	742	751	759	767	775	784	792	801	809	818	827	41
42	752	760	769	777	786	794	803	812	820	829	838	847	42
43	770	778	787	796	805	813	822	831	840	849	858	867	43
44	788	797	805	814	823	832	841	850	859	869	878	887	44
45	806	815	824	833	842	851	860	870	879	888	898	907	45
46	824	833	842	851	861	870	879	889	898	908	918	927	46
47	842	851	860	870	879	889	899	908	918	928	938	948	47
48	859	869	879	888	898	908	918	928	938	948	958	968	48
49	877	887	897	907	917	927	937	947	957	967	978	988	49
50	895	905	915	925	935	946	956	966	977	987	997	1008	50
51	913	923	934	944	954	965	975	986	996	1007	1017	1028	51
52	931	941	952	962	973	984	994	1005	1016	1026	1037	1048	52
53	949	960	970	981	992	1002	1013	1024	1035	1046	1057	1068	53
54	967	978	988	999	1010	1021	1032	1044	1055	1066	1077	1089	54
55	985	996	1007	1018	1029	1040	1052	1063	1074	1086	1097	1109	55

MID-GIRTH 16 ft. 0 in. to 16 ft. 11 in.

Length Feet	0	1	2	3	4	5	6	7	8	9	10	11	Length Feet
10	204	206	208	210	212	214	217	219	221	223	225	228	10
11	224	226	229	231	234	236	238	241	243	246	248	251	11
12	244	247	250	252	255	257	260	263	265	268	271	273	12
13	265	268	270	273	276	279	282	285	287	290	293	296	13
14	285	288	291	294	297	300	303	306	309	313	316	319	14
15	306	309	312	315	318	322	325	328	332	335	338	342	15
16	326	329	333	336	340	343	347	350	354	357	361	364	16
17	346	350	354	357	361	365	368	372	376	380	383	387	17
18	367	371	374	378	382	386	390	394	398	402	406	410	18
19	387	391	395	399	403	407	412	416	420	424	428	433	19
20	407	412	416	420	425	429	433	438	442	447	451	455	20
21	428	432	437	441	446	450	455	460	464	469	474	478	21
22	448	453	458	462	467	472	477	481	486	491	496	501	22
23	469	473	478	483	488	493	498	503	508	514	519	524	23
24	489	494	499	504	510	515	520	525	531	536	541	547	24
25	509	515	520	525	531	536	542	547	553	558	564	569	25
26	530	535	541	546	552	558	563	569	575	580	586	592	26
27	550	556	562	567	573	579	585	591	597	603	609	615	27
28	570	576	582	588	594	601	607	613	619	625	631	638	28
29	591	597	603	609	616	622	628	635	641	647	654	660	29
30	611	618	624	630	637	643	650	657	663	670	676	683	30
31	682	688	695	701	708	715	722	729	737	744	752	759	31
32	652	659	666	672	679	686	693	700	707	714	722	729	32
33	672	679	686	693	701	708	715	722	729	737	744	752	33
34	693	700	707	714	722	729	737	744	752	759	767	774	34
35	713	720	728	735	743	751	758	766	774	781	789	797	35
36	733	741	749	756	764	772	780	788	796	804	812	820	36
37	754	762	770	778	785	794	802	810	818	826	834	843	37
38	774	782	790	799	807	815	823	832	840	848	857	865	38
39	795	803	811	820	828	836	845	853	862	871	879	888	39
40	815	823	832	841	849	858	867	875	884	893	902	911	40
41	835	844	853	862	870	879	888	897	906	915	925	934	41
42	858	865	874	883	892	901	910	919	928	938	947	956	42
43	876	885	894	904	913	922	932	941	951	960	970	979	43
44	896	906	915	925	934	944	953	963	973	982	992	1002	44
45	917	926	936	946	955	965	975	985	995	1005	1015	1025	45
46	937	947	957	967	977	987	997	1007	1017	1027	1037	1048	46
47	957	967	978	988	998	1008	1018	1029	1039	1049	1060	1070	47
48	978	988	998	1009	1019	1029	1040	1050	1061	1072	1082	1093	48
49	998	1009	1019	1030	1040	1051	1062	1072	1083	1094	1105	1116	49
50	1019	1029	1040	1051	1061	1072	1083	1094	1105	1116	1127	1139	50
51	1039	1050	1061	1072	1083	1094	1105	1116	1127	1139	1150	1161	51
52	1059	1070	1082	1093	1104	1115	1127	1138	1149	1161	1173	1184	52
53	1080	1091	1102	1114	1125	1137	1148	1160	1172	1183	1195	1207	53
54	1100	1112	1123	1135	1146	1158	1170	1182	1194	1206	1218	1230	54
55	1120	1132	1144	1156	1168	1180	1192	1204	1216	1228	1240	1253	55

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MID-GIRTH 17 ft. 0 in. to 17 ft. 11 in.

Length Feet	0	1	2	3	4	5	6	7	8	9	10	11	Length Feet
10	230	232	235	237	239	241	244	246	248	251	253	255	10
11	253	255	258	260	263	266	268	271	273	276	278	281	11
12	276	279	281	284	287	290	292	295	298	301	304	307	12
13	299	302	305	308	311	314	317	320	323	326	329	332	13
14	322	325	328	332	335	338	341	344	348	351	354	358	14
15	345	348	352	355	359	362	366	369	373	376	380	383	15
16	368	372	375	379	383	386	390	394	397	401	405	409	16
17	391	395	399	408	406	410	414	418	422	426	430	434	17
18	414	418	422	426	430	435	439	443	447	451	456	460	18
19	437	441	446	450	454	459	463	467	472	476	481	485	19
20	430	464	469	474	478	483	487	492	497	501	506	511	20
21	483	488	492	497	502	507	512	517	522	527	531	536	21
22	506	511	516	521	526	531	536	541	546	552	557	562	22
23	529	534	539	545	550	555	561	566	571	577	582	588	23
24	552	557	563	568	574	579	585	590	596	602	607	613	24
25	575	581	586	592	598	603	609	615	621	627	633	639	25
26	598	604	610	616	622	628	634	640	646	652	658	664	26
27	621	627	633	639	646	652	658	664	671	677	683	690	27
28	644	650	657	663	669	676	682	689	695	702	709	715	28
29	687	693	699	704	710	717	724	731	738	745	752	759	29
30	690	697	704	710	717	724	731	738	745	752	759	766	30

31	713	720	727	734	741	748	755	763	770	777	785	792	31
32	736	743	750	758	765	772	780	787	795	802	810	817	32
33	759	766	774	781	789	797	804	812	820	827	835	843	33
34	782	790	797	805	813	821	829	837	844	852	860	869	34
35	805	813	821	829	837	845	853	861	869	878	886	894	35
36	828	836	844	852	861	869	877	886	894	903	911	920	36
37	851	859	868	876	885	893	902	910	919	928	936	945	37
38	874	883	891	900	909	917	926	935	944	953	962	971	38
39	897	906	915	923	932	941	950	960	969	978	987	996	39
40	920	929	938	947	956	966	975	984	993	1003	1012	1022	40
41	943	952	961	971	980	990	999	1009	1018	1028	1038	1047	41
42	966	975	985	995	1004	1014	1024	1033	1043	1053	1063	1073	42
43	989	999	1008	1018	1028	1038	1048	1058	1068	1078	1088	1098	43
44	1012	1022	1032	1042	1052	1062	1072	1083	1093	1103	1114	1124	44
45	1035	1045	1055	1066	1076	1086	1097	1107	1118	1128	1139	1150	45
46	1058	1068	1079	1089	1100	1110	1121	1132	1143	1153	1164	1175	46
47	1081	1092	1102	1113	1124	1135	1145	1156	1167	1178	1189	1201	47
48	1104	1115	1126	1137	1148	1159	1170	1181	1192	1203	1215	1226	48
49	1127	1138	1149	1160	1172	1183	1194	1206	1217	1229	1240	1252	49
50	1150	1161	1173	1184	1195	1207	1219	1230	1242	1254	1265	1277	50
51	1173	1184	1196	1208	1219	1231	1243	1255	1267	1279	1291	1303	51
52	1196	1208	1219	1231	1243	1255	1267	1279	1292	1304	1316	1328	52
53	1219	1231	1243	1255	1267	1279	1292	1304	1316	1329	1341	1354	53
54	1242	1254	1266	1279	1291	1304	1316	1329	1341	1354	1367	1379	54
55	1265	1277	1290	1302	1315	1328	1340	1353	1366	1379	1392	1405	55

MID-GIRTH 18 ft. 0 in. to 18 ft. 11 in.

Length Feet	0	1	2	3	4	5	6	7	8	9	10	11	Length Feet
10	258	260	263	265	267	270	272	275	277	280	282	285	10
11	284	286	289	292	294	297	300	302	305	308	310	313	11
12	309	312	315	318	321	324	327	330	333	336	339	342	12
13	335	338	341	345	348	351	354	357	360	364	367	370	13
14	361	364	368	371	374	378	381	385	388	392	395	399	14
15	387	390	394	398	401	405	409	412	416	420	423	427	15
16	413	416	420	424	428	432	436	440	444	448	452	456	16
17	438	443	446	451	455	459	463	467	471	476	480	484	17
18	464	468	473	477	481	486	490	495	499	504	508	513	18
19	490	494	499	504	508	513	517	522	527	532	536	541	19
20	516	520	525	530	535	540	545	550	555	560	565	570	20
21	541	546	552	557	562	567	572	577	582	588	593	598	21
22	567	572	578	583	588	594	599	605	610	615	621	626	22
23	593	599	604	610	615	621	626	632	638	643	649	655	23
24	619	625	630	636	642	648	654	660	665	671	677	683	24
25	645	651	657	663	669	675	681	687	693	699	706	712	25
26	670	677	683	689	695	702	708	715	721	727	734	740	26
27	696	703	709	716	722	729	735	742	749	755	762	769	27
28	722	729	735	742	749	756	763	769	776	783	790	797	28
29	748	755	762	769	776	783	790	797	804	811	819	826	29
30	773	781	788	795	802	810	817	824	832	839	847	854	30
31	799	807	814	822	829	837	844	852	860	867	875	883	31
32	825	833	840	848	856	864	872	879	887	895	903	911	32
33	851	859	867	875	883	891	899	907	915	923	931	940	33
34	877	885	893	901	909	918	926	934	943	951	960	968	34
35	902	911	919	928	936	945	953	962	970	979	988	997	35
36	928	937	945	954	963	972	980	988	998	1007	1016	1025	36
37	954	963	971	981	990	999	1008	1017	1026	1035	1044	1054	37
38	980	989	998	1007	1016	1026	1035	1044	1054	1063	1073	1082	38
39	1006	1015	1024	1034	1043	1053	1062	1072	1081	1091	1101	1111	39
40	1031	1041	1051	1060	1070	1080	1089	1099	1109	1119	1129	1139	40
41	1057	1067	1077	1087	1097	1107	1117	1127	1137	1147	1157	1168	41
42	1083	1093	1103	1113	1123	1134	1144	1154	1165	1175	1185	1196	42
43	1109	1119	1129	1140	1150	1161	1171	1182	1192	1203	1214	1224	43
44	1134	1145	1156	1166	1177	1188	1198	1209	1220	1231	1242	1253	44
45	1160	1171	1182	1193	1204	1215	1226	1237	1248	1259	1270	1281	45
46	1186	1197	1208	1219	1230	1242	1253	1264	1276	1287	1298	1310	46
47	1212	1223	1234	1246	1257	1269	1280	1292	1303	1315	1327	1338	47
48	1238	1249	1261	1272	1284	1296	1307	1319	1331	1343	1355	1367	48
49	1263	1275	1287	1299	1311	1323	1335	1347	1359	1371	1383	1395	49
50	1289	1301	1313	1325	1337	1350	1362	1374	1386	1399	1411	1424	50
51	1315	1327	1339	1352	1364	1377	1389	1402	1414	1427	1440	1452	51
52	1341	1353	1366	1378	1391	1404	1416	1429	1442	1455	1468	1481	52
53	1367	1379	1392	1405	1418	1431	1443	1457	1470	1483	1496	1509	53
54	1392	1405	1418	1431	1444	1457	1471	1484	1497	1511	1524	1538	54
55	1418	1431	1444	1458	1471	1484	1498	1511	1525	1539	1552	1566	55

MID-GIRTH 19 ft. 0 in. to 19 ft. 11 in.

Length Feet	0	1	2	3	4	5	6	7	8	9	10	11	Length Feet
10	287	290	292	295	297	300	303	305	308	310	313	316	10
11	316	319	322	324	327	330	333	336	339	341	344	347	11
12	345	348	351	354	357	360	363	366	369	372	376	379	12
13	373	377	380	383	387	390	393	397	400	404	407	410	13
14	402	406	409	413	416	420	424	427	431	435	438	442	14
15	431	435	439	442	446	450	454	458	462	466	470	473	15
16	460	464	468	472	476	480	484	488	492	497	501	505	16
17	488	493	497	501	506	510	514	519	523	528	532	537	17
18	517	522	526	531	535	540	545	549	554	559	563	568	18
19	546	551	555	560	565	570	575	580	585	590	595	600	19
20	575	580	585	590	595	600	605	610	616	621	626	631	20
21	608	609	614	619	625	630	635	641	646	652	657	663	21
22	632	638	643	649	654	660	666	671	677	683	689	694	22
23	661	667	672	678	684	690	696	702	708	714	720	726	23
24	689	696	702	708	714	720	726	732	739	745	751	758	24
25	718	725	731	737	744	750	756	763	769	776	783	789	25
26	747	753	760	767	773	780	787	793	800	807	814	821	26
27	776	782	789	796	803	810	817	824	831	838	845	852	27
28	804	811	819	826	833	840	847	855	862	869	876	884	28
29	833	840	848	855	863	870	878	885	893	900	908	915	29
30	862	869	877	885	892	900	908	916	923	931	939	947	30
31	891	898	906	914	922	930	938	946	954	962	970	979	31
32	919	927	935	944	952	960	968	977	985	993	1002	1010	32
33	948	956	965	973	982	990	999	1007	1016	1024	1033	1042	33
34	977	985	994	1003	1011	1020	1029	1038	1046	1055	1064	1073	34
35	1006	1014	1023	1032	1041	1050	1059	1068	1077	1086	1096	1105	35
36	1034	1043	1052	1062	1071	1080	1089	1099	1108	1117	1127	1136	36
37	1063	1072	1082	1091	1101	1110	1120	1129	1139	1148	1158	1168	37
38	1092	1101	1111	1121	1130	1140	1150	1160	1170	1180	1190	1200	38
39	1120	1130	1140	1150	1160	1170	1180	1190	1200	1211	1221	1231	39
40	1149	1159	1169	1180	1188	1200	1210	1221	1231	1242	1252	1263	40
41	1178	1188	1199	1209	1220	1230	1241	1251	1262	1273	1283	1294	41
42	1207	1217	1228	1239	1249	1260	1271	1282	1293	1304	1315	1326	42
43	1235	1246	1257	1268	1279	1290	1301	1312	1323	1335	1346	1357	43
44	1264	1275	1286	1297	1309	1320	1331	1343	1354	1366	1377	1389	44
45	1293	1304	1316	1327	1338	1350	1362	1373	1385	1397	1409	1420	45
46	1321	1333	1345	1356	1368	1380	1392	1404	1416	1428	1440	1452	46
47	1350	1362	1374	1386	1398	1410	1422	1434	1447	1459	1471	1484	47
48	1379	1391	1403	1415	1428	1440	1452	1465	1477	1490	1503	1515	48
49	1408	1420	1432	1445	1457	1470	1483	1495	1508	1521	1534	1547	49
50	1436	1449	1462	1474	1487	1500	1513	1526	1539	1552	1565	1578	50
51	1465	1478	1491	1504	1517	1530	1543	1556	1570	1583	1596	1610	51
52	1494	1507	1520	1533	1547	1560	1573	1587	1601	1614	1628	1641	52
53	1523	1536	1549	1563	1576	1590	1604	1617	1631	1645	1659	1673	53
54	1551	1565	1579	1592	1606	1620	1634	1648	1662	1676	1690	1705	54
55	1580	1594	1608	1622	1636	1650	1664	1679	1693	1707	1722	1736	55

MID-GIRTH 20 ft. 0 in. to 20 ft. 11 in.

Length Feet	0	1	2	3	4	5	6	7	8	9	10	11	Length Feet
10	318	321	324	326	329	332	334	337	340	343	345	348	10
11	350	353	356	359	362	365	368	371	374	377	380	383	11
12	382	385	388	392	395	398	401	405	408	411	414	418	12
13	414	417	421	424	428	431	435	438	442	445	449	453	13
14	446	449	453	457	461	464	468	472	476	480	484	487	14
15	477	481	485	489	494	498	502	506	510	514	518	522	15
16	509	514	518	522	526	531	535	539	544	548	553	557	16
17	541	546	550	555	559	564	569	573	578	582	587	592	17
18	573	578	583	587	592	597	602	607	612	617	622	627	18
19	605	610	615	620	625	630	635	641	646	651	656	661	19
20	637	642	647	653	658	663	669	674	680	685	691	696	20
21	668	674	680	685	691	697	702	708	714	720	725	731	21
22	700	706	712	718	724	730	736	742	748	754	760	766	22
23	732	738	744	751	757	763	769	775	782	788	794	801	23
24	764	770	777	783	790	796	803	809	816	822	829	836	24
25	796	802	809	816	823	829	836	843	850	857	863	870	25
26	828	835	841	848	855	862	870	877	884	891	898	905	26
27	859	867	874	881	888	896	903	910	918	925	933	940	27
28	891	899	906	914	921	929	936	944	952	959	967	975	28
29	923	931	939	946	954	962	970	978	986	994	1002	1010	29
30	955	963	971	979	987	995	1003	1011	1020	1028	1036	1044	30
31	987	995	1003	1012	1020	1028	1037	1045	1054	1062	1071	1079	31
32	1019	1027	1036	1044	1053	1061	1070	1079	1088	1096	1105	1114	32
33	1050	1059	1068	1077	1086	1095	1104	1113	1122	1131	1140	1149	33
34	1082	1091	1100	1109	1119	1128	1137	1146	1156	1165	1174	1184	34
35	1114	1123	1133	1142	1152	1161	1170	1180	1190	1199	1209	1219	35
36	1146	1155	1165	1175	1184	1194	1204	1214	1224	1233	1243	1253	36
37	1178	1188	1197	1207	1217	1227	1237	1247	1258	1268	1278	1288	37
38	1210	1220	1230	1240	1250	1261	1271	1281	1292	1302	1312	1323	38
39	1241	1252	1262	1273	1283	1294	1304	1315	1326	1336	1347	1358	39
40	1273	1284	1295	1305	1316	1327	1338	1349	1360	1371	1382	1393	40
41	1305	1316	1327	1338	1349	1360	1371	1382	1394	1405	1416	1427	41
42	1337	1348	1359	1371	1382	1393	1405	1416	1428	1439	1451	1462	42
43	1369	1380	1392	1403	1415	1426	1438	1450	1462	1473	1485	1497	43
44	1401	1412	1424	1436	1448	1460	1471	1483	1495	1508	1520	1532	44
45	1432	1444	1456	1468	1481	1493	1505	1517	1529	1542	1554	1567	45
46	1464	1476	1489	1501	1513	1526	1538	1551	1563	1576	1589	1602	46
47	1496	1509	1521	1534	1546	1559	1572	1585	1597	1610	1623	1636	47
48	1528	1541	1553	1566	1579	1592	1605	1618	1631	1645	1658	1671	48
49	1560	1573	1586	1599	1612	1625	1639	1652	1665	1679	1692	1706	49
50	1592	1605	1618	1632	1645	1659	1672	1686	1699	1713	1727	1741	50
51	1623	1637	1651	1664	1678	1692	1706	1719	1733	1747	1761	1776	51
52	1655	1669	1683	1697	1711	1725	1739	1753	1767	1782	1796	1810	52
53	1687	1701	1715	1729	1744	1758	1772	1787	1801	1816	1831	1845	53
54	1719	1733	1748	1762	1777	1791	1806	1821	1835	1850	1865	1880	54
55	1751	1765	1780	1795	1810	1824	1839	1854	1869	1884	1900	1915	55

MID-GIRTH 21 ft. 0 in. to 21 ft. 11 in.

Length Feet	0	1	2	3	4	5	6	7	8	9	10	11	Length Feet
10	351	354	357	359	362	365	368	371	374	376	379	382	10
11	386	389	392	395	398	402	405	408	411	414	417	420	11
12	421	424	428	431	435	438	441	445	448	452	455	459	12
13	456	460	463	467	471	475	478	482	486	489	493	497	13
14	491	495	499	503	507	511	515	519	523	527	531	535	14
15	526	531	535	539	543	548	552	556	560	565	569	573	15
16	562	566	570	575	579	584	589	593	598	602	607	612	16
17	597	601	606	611	616	621	625	630	635	640	645	650	17
18	632	637	642	647	652	657	662	667	672	678	683	688	18
19	667	672	677	683	688	694	699	704	710	715	721	726	19
20	702	707	713	719	724	730	736	741	747	753	759	764	20
21	787	743	749	755	761	767	772	778	785	791	797	803	21
22	772	778	784	791	797	803	809	816	822	828	835	841	22
23	807	814	820	826	833	840	846	853	859	866	872	879	23
24	842	849	856	862	869	876	883	890	897	903	910	917	24
25	877	884	891	898	905	913	920	927	934	941	948	956	25
26	912	920	927	934	942	949	956	964	971	979	986	994	26
27	948	955	963	970	978	986	993	1001	1009	1016	1024	1032	27
28	983	990	998	1006	1014	1022	1030	1038	1046	1054	1062	1070	28
29	1018	1026	1034	1042	1050	1059	1067	1075	1083	1092	1100	1109	29
30	1053	1061	1070	1078	1087	1095	1104	1112	1121	1129	1138	1147	30
31	1088	1097	1105	1114	1123	1132	1140	1149	1158	1167	1176	1185	31
32	1123	1132	1141	1150	1159	1168	1177	1186	1196	1205	1214	1223	32
33	1158	1167	1177	1186	1195	1205	1214	1223	1233	1242	1252	1261	33
34	1193	1203	1212	1222	1231	1241	1251	1260	1270	1280	1290	1300	34
35	1228	1238	1248	1258	1268	1278	1287	1297	1308	1318	1328	1338	35
36	1263	1273	1284	1294	1304	1314	1324	1335	1345	1355	1366	1376	36
37	1298	1309	1319	1330	1340	1351	1361	1372	1382	1393	1404	1414	37
38	1334	1344	1355	1366	1376	1387	1398	1409	1420	1431	1442	1453	38
39	1369	1380	1390	1401	1412	1424	1435	1446	1457	1468	1479	1491	39
40	1404	1415	1426	1437	1449	1460	1471	1483	1494	1506	1517	1529	40
41	1439	1450	1462	1473	1485	1497	1508	1520	1532	1543	1555	1567	41
42	1474	1486	1497	1509	1521	1533	1545	1557	1569	1581	1593	1605	42
43	1509	1521	1533	1545	1557	1570	1582	1594	1606	1619	1631	1644	43
44	1544	1556	1569	1581	1594	1606	1619	1631	1644	1658	1669	1682	44
45	1579	1592	1604	1617	1630	1643	1655	1668	1681	1694	1707	1720	45
46	1614	1627	1640	1653	1666	1679	1692	1705	1718	1732	1745	1758	46
47	1649	1663	1676	1689	1702	1716	1729	1742	1756	1769	1783	1797	47
48	1684	1698	1711	1725	1738	1752	1766	1779	1793	1807	1821	1835	48
49	1720	1733	1747	1761	1775	1789	1802	1816	1831	1845	1859	1873	49
50	1755	1769	1783	1797	1811	1825	1839	1853	1868	1882	1897	1911	50
51	1790	1804	1818	1833	1847	1862	1876	1891	1905	1920	1935	1949	51
52	1825	1839	1854	1869	1883	1898	1913	1928	1943	1958	1973	1988	52
53	1860	1875	1890	1905	1919	1935	1950	1965	1980	1995	2011	2026	53
54	1895	1910	1925	1940	1956	1971	1986	2002	2017	2033	2048	2064	54
55	1930	1946	1961	1976	1992	2008	2023	2039	2055	2070	2086	2102	55

MID-GIRTH 22 ft. 0 in. to 22 ft. 11 in.

Length Feet	0	1	2	3	4	5	6	7	8	9	10	11	Length Feet
10	385	388	391	394	397	400	403	406	409	412	415	418	10
11	424	427	430	433	437	440	443	446	450	453	456	460	11
12	462	468	469	473	476	480	483	487	491	494	498	502	12
13	501	505	508	512	516	520	524	528	532	535	539	543	13
14	539	543	547	552	556	560	564	568	572	577	581	585	14
15	578	582	587	591	595	600	604	609	613	618	622	627	15
16	616	621	626	630	635	640	645	649	654	659	664	669	16
17	655	660	665	670	675	680	685	690	695	700	705	710	17
18	698	699	704	709	714	720	725	731	736	741	747	752	18
19	732	737	743	749	754	760	765	771	777	783	788	794	19
20	770	776	782	788	794	800	806	812	818	824	830	836	20
21	809	815	821	827	834	840	846	852	859	865	871	878	21
22	847	854	860	867	873	880	886	893	899	906	913	919	22
23	886	893	899	906	913	920	927	933	940	947	954	961	23
24	924	931	938	946	953	960	967	974	981	988	996	1003	24
25	963	970	978	985	992	1000	1007	1015	1022	1030	1037	1045	25
26	1001	1009	1017	1024	1032	1040	1047	1055	1063	1071	1074	1087	26
27	1040	1048	1056	1064	1072	1080	1088	1096	1104	1112	1120	1128	27
28	1078	1087	1095	1103	1111	1120	1128	1136	1145	1153	1162	1170	28
29	1117	1125	1134	1142	1151	1160	1168	1177	1186	1194	1203	1212	29
30	1155	1164	1173	1182	1191	1200	1209	1218	1227	1236	1245	1254	30
31	1194	1203	1212	1221	1230	1240	1249	1258	1267	1277	1286	1296	31
32	1231	1242	1251	1261	1270	1280	1289	1299	1308	1318	1328	1337	32
33	1271	1281	1290	1300	1310	1320	1329	1339	1349	1359	1369	1379	33
34	1310	1319	1329	1339	1350	1360	1370	1380	1390	1400	1411	1421	34
35	1348	1358	1369	1379	1389	1400	1410	1420	1431	1442	1452	1463	35
36	1387	1397	1408	1418	1429	1440	1450	1461	1472	1483	1494	1505	36
37	1425	1436	1447	1458	1469	1480	1491	1502	1513	1524	1535	1546	37
38	1464	1475	1486	1497	1508	1520	1531	1542	1554	1565	1577	1588	38
39	1502	1514	1525	1536	1548	1560	1571	1583	1595	1606	1618	1630	39
40	1541	1552	1564	1576	1588	1600	1611	1623	1635	1647	1660	1672	40
41	1579	1591	1603	1615	1627	1640	1652	1664	1676	1689	1701	1713	41
42	1618	1630	1642	1655	1667	1680	1692	1705	1717	1730	1743	1755	42
43	1656	1669	1681	1694	1707	1719	1732	1745	1758	1771	1784	1797	43
44	1695	1708	1720	1733	1746	1759	1773	1786	1799	1812	1826	1839	44
45	1733	1746	1760	1773	1786	1799	1813	1826	1840	1853	1867	1881	45
46	1772	1785	1799	1812	1826	1839	1853	1867	1881	1895	1908	1922	46
47	1810	1824	1838	1852	1866	1879	1893	1908	1922	1936	1950	1964	47
48	1849	1863	1877	1891	1905	1919	1934	1948	1962	1977	1991	2006	48
49	1887	1902	1916	1930	1945	1959	1974	1989	2003	2018	2033	2048	49
50	1926	1940	1955	1970	1985	1999	2014	2029	2044	2059	2074	2089	50
51	1964	1979	1994	2009	2024	2039	2055	2070	2085	2101	2116	2131	51
52	2003	2018	2033	2049	2064	2079	2095	2110	2126	2142	2157	2173	52
53	2041	2057	2072	2088	2104	2119	2135	2151	2167	2183	2199	2215	53
54	2080	2096	2111	2127	2143	2159	2175	2192	2208	2224	2240	2257	54
55	2118	2134	2151	2167	2183	2199	2216	2232	2249	2265	2282	2299	55

MID-GIRTH 23 ft. 0 in. to 23 ft. 11 in.

Length Feet	0	1	2	3	4	5	6	7	8	9	10	11	Length Feet
10	421	424	427	430	433	436	439	443	446	449	452	455	10
11	463	466	470	473	477	480	483	487	490	494	497	501	11
12	505	509	513	516	520	524	527	531	535	539	542	546	12
13	547	551	555	559	563	567	571	575	579	584	588	592	13
14	589	594	598	602	607	611	615	620	624	628	633	637	14
15	631	636	641	645	650	655	659	664	669	673	678	683	15
16	674	678	683	688	693	698	703	708	713	718	723	728	16
17	716	721	726	731	737	742	747	752	758	763	768	774	17
18	758	763	769	774	780	785	791	797	802	808	814	819	18
19	800	806	811	817	823	829	835	841	847	853	859	865	19
20	842	848	854	860	867	873	879	885	891	898	904	910	20
21	884	890	897	903	910	916	923	929	936	943	949	956	21
22	926	933	940	946	953	960	967	974	981	988	994	1001	22
23	968	975	982	989	996	1004	1011	1018	1025	1032	1040	1047	23
24	1010	1018	1025	1032	1039	1047	1055	1062	1070	1077	1085	1092	24
25	1052	1060	1068	1075	1083	1091	1099	1106	1114	1122	1130	1138	25
26	1095	1102	1110	1118	1126	1135	1143	1151	1159	1167	1175	1183	26
27	1137	1145	1153	1161	1170	1178	1187	1195	1203	1212	1220	1229	27
28	1179	1187	1196	1204	1213	1222	1231	1239	1248	1257	1266	1275	28
29	1221	1230	1238	1247	1256	1265	1274	1284	1293	1302	1311	1320	29
30	1263	1272	1281	1291	1300	1309	1318	1328	1337	1347	1356	1366	30
31	1305	1314	1324	1334	1343	1353	1362	1372	1382	1391	1401	1411	31
32	1347	1357	1367	1377	1386	1396	1406	1416	1426	1436	1446	1457	32
33	1389	1399	1409	1420	1430	1440	1450	1461	1471	1481	1492	1502	33
34	1431	1442	1452	1463	1473	1484	1494	1505	1515	1526	1537	1548	34
35	1473	1484	1495	1506	1516	1527	1538	1549	1560	1571	1582	1593	35
36	1515	1526	1538	1549	1560	1571	1582	1593	1605	1616	1627	1639	36
37	1558	1569	1580	1592	1603	1615	1626	1638	1649	1661	1672	1684	37
38	1600	1611	1623	1635	1646	1658	1670	1682	1694	1706	1718	1730	38
39	1642	1654	1666	1678	1690	1702	1714	1726	1738	1751	1763	1775	39
40	1684	1696	1708	1721	1733	1745	1758	1770	1783	1795	1808	1821	40
41	1726	1738	1751	1764	1776	1789	1802	1815	1827	1840	1853	1866	41
42	1768	1781	1794	1807	1820	1833	1846	1859	1872	1885	1898	1912	42
43	1810	1823	1836	1850	1863	1876	1890	1903	1917	1930	1944	1957	43
44	1852	1866	1879	1893	1906	1920	1934	1947	1961	1975	1989	2003	44
45	1894	1908	1922	1936	1950	1964	1978	1992	2006	2020	2034	2048	45
46	1936	1951	1964	1979	1993	2007	2022	2036	2050	2065	2079	2094	46
47	1979	1993	2007	2022	2036	2051	2065	2080	2095	2110	2125	2139	47
48	2021	2035	2050	2065	2080	2095	2109	2124	2139	2155	2170	2185	48
49	2063	2078	2093	2108	2123	2138	2153	2169	2184	2199	2215	2230	49
50	2105	2120	2135	2151	2166	2182	2197	2213	2229	2244	2260	2276	50
51	2147	2163	2178	2194	2210	2225	2241	2257	2273	2289	2305	2321	51
52	2189	2205	2221	2237	2253	2269	2285	2301	2318	2334	2351	2367	52
53	2231	2247	2264	2280	2296	2313	2329	2346	2362	2379	2396	2413	53
54	2273	2290	2306	2323	2340	2356	2373	2390	2407	2424	2441	2458	54
55	2315	2332	2349	2366	2383	2400	2417	2434	2451	2469	2486	2504	55

MID-GIRTH 24 ft. 0 in. to 24 ft. 11 in.

Length Feet	0	1	2	3	4	5	6	7	8	9	10	11	Length Feet
10	458	462	465	468	471	474	478	481	484	487	491	494	10
11	504	508	511	515	518	522	525	529	533	536	540	543	11
12	550	554	558	562	565	569	573	577	581	585	589	593	12
13	596	600	604	608	613	617	621	625	629	634	638	642	13
14	642	646	651	655	660	664	669	673	678	682	687	692	14
15	688	692	697	702	707	712	717	721	726	731	736	741	15
16	733	738	744	749	754	759	764	769	775	780	785	790	16
17	779	785	790	796	801	807	812	818	823	829	834	840	17
18	825	831	837	842	848	854	860	866	872	877	883	889	18
19	871	877	883	889	895	901	908	914	920	926	932	939	19
20	917	923	930	936	942	949	955	962	968	975	982	988	20
21	963	969	976	983	989	996	1003	1010	1017	1024	1031	1038	21
22	1008	1015	1022	1030	1037	1044	1051	1058	1065	1072	1080	1087	22
23	1054	1062	1069	1076	1084	1091	1099	1106	1114	1121	1129	1136	23
24	1100	1108	1115	1123	1131	1139	1146	1154	1162	1170	1178	1186	24
25	1146	1154	1162	1170	1178	1186	1194	1202	1210	1219	1227	1235	25
26	1192	1200	1208	1217	1225	1233	1242	1250	1259	1267	1276	1285	26
27	1238	1246	1255	1264	1272	1281	1290	1298	1307	1316	1325	1334	27
28	1283	1292	1301	1310	1319	1328	1337	1347	1356	1365	1374	1383	28
29	1329	1339	1348	1357	1366	1376	1385	1395	1404	1414	1423	1433	29
30	1375	1385	1394	1404	1414	1423	1433	1443	1453	1462	1472	1482	30

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31	1421	1431	1441	1451	1461	1471	1481	1491	1501	1511	1521	1532	31
32	1467	1477	1487	1497	1508	1518	1529	1539	1549	1560	1570	1581	32
33	1513	1523	1534	1544	1555	1566	1576	1587	1598	1609	1619	1630	33
34	1558	1569	1580	1591	1602	1613	1624	1635	1646	1657	1669	1680	34
35	1604	1615	1627	1638	1649	1660	1672	1683	1695	1706	1718	1729	35
36	1650	1662	1673	1685	1696	1708	1720	1731	1743	1755	1767	1779	36
37	1696	1708	1720	1731	1743	1755	1767	1779	1791	1804	1816	1828	37
38	1742	1754	1766	1778	1791	1803	1815	1827	1840	1852	1865	1877	38
39	1788	1800	1813	1825	1838	1850	1863	1876	1888	1901	1914	1927	39
40	1833	1846	1859	1872	1885	1898	1911	1924	1937	1950	1963	1976	40
41	1879	1892	1906	1919	1932	1945	1958	1972	1985	1999	2012	2026	41
42	1925	1939	1952	1965	1979	1993	2006	2020	2034	2047	2061	2075	42
43	1971	1985	1998	2012	2026	2040	2054	2068	2082	2096	2110	2124	43
44	2017	2031	2045	2059	2073	2087	2102	2116	2130	2145	2159	2174	44
45	2063	2077	2091	2106	2120	2135	2149	2164	2179	2194	2208	2223	45
46	2108	2123	2138	2153	2167	2182	2197	2212	2227	2242	2257	2273	46
47	2154	2169	2184	2199	2215	2230	2245	2260	2276	2291	2307	2322	47
48	2200	2215	2231	2246	2262	2277	2293	2308	2324	2340	2356	2371	48
49	2246	2262	2277	2293	2309	2325	2341	2357	2373	2389	2405	2421	49
50	2292	2308	2324	2340	2356	2372	2388	2405	2421	2437	2454	2470	50
51	2338	2354	2370	2387	2403	2420	2436	2453	2469	2486	2503	2520	51
52	2384	2400	2417	2433	2450	2467	2484	2501	2518	2535	2552	2569	52
53	2429	2446	2463	2480	2497	2514	2532	2549	2566	2584	2601	2618	53
54	2475	2492	2510	2527	2544	2562	2579	2597	2615	2632	2650	2668	54
55	2521	2539	2556	2574	2592	2609	2627	2645	2663	2681	2699	2717	55

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TABLE 2.—WEIGHTS AND STRENGTHS OF W.A. TIMBERS

Name of Timber	Weight per Cubic Foot		Weight per Load of 50 Cubic Feet		Modulus of Rupture at 12 per cent. Moisture
	Green	Dry	Green	Dry	
	lb.	lb.	lb.	lb.	
Jarrah	68	52	3,400	2,600	16,200
Karrī	72	57	3,600	2,850	19,200
♂ Tuart	78	65	3,900	3,250	18,100
Wandoo	79	69	3,950	3,450	20,600
Blackbutt	69	53	3,450	2,650	14,300
Red Tingle	73	49	3,650	2,450	14,200
Yellow Tingle	74	62	3,700	3,100	19,400
Marri (Red Gum)	72	54	3,600	2,700	18,200
Brown Mallet	70	61	3,500	3,050	26,000
Pinus Radiata	56	30	2,800	1,500	8,900

Pinus pinaster	65	37	3,250	1,850	13,530
Douglas Fir (Oregon—Imported)	39	33	1,950	1,650	11,700
Yate	79	71	3,950	3,550	21,500

Note.—Modulus of Rupture from modern tests by C.S.I.R.O.

York Gum	77	67	3,850	3,350	14,000
Salmon Gum	70	66	3,500	3,300	19,500
Morrell	73	64	3,650	3,200	16,000
♂ Coolibab	82	82	4,100	4,100	17,360
Sheoak	60	52	3,000	2,600	12,000
Bankxia	59	35	2,950	1,750	10,300
Raspberry Jam	73	62	3,650	3,100	15,300
Swamp Oak	76	65	3,800	3,250	20,650
Native Pear	56	46	2,800	2,300	7,670
Karrī Sheoak	64	44	3,200	2,200	9,020

Note.—Modulus of Rupture from early tests by Julius.

TABLE 3.—CONVERSION OF SUPER

1 cubic foot @ 12 super

Sup. ft.	Parts	Cub. ft.	Sup. ft.	Parts	Cub. ft.	Sup. ft.	Parts	Cub. ft.
0	1	.01	2	1	.17	4	1	.34
	2	.01		2	.18		2	.35
	3	.02		3	.19		3	.35
	4	.03		4	.19		4	.36
	5	.03		5	.20		5	.37
	6	.04		6	.21		6	.38
	7	.05		7	.22		7	.38
	8	.06		8	.22		8	.39
	9	.06		9	.23		9	.40
	10	.07		10	.24		10	.40
	11	.08		11	.24		11	.41
1	0	.08	8	0	.25	5	0	.42
	1	.09		1	.26		1	.42
	2	.10		2	.26		2	.43
	3	.10		3	.27		3	.44
	4	.11		4	.28		4	.44
	5	.12		5	.28		5	.45
	6	.13		6	.29		6	.46
	7	.13		7	.30		7	.47
	8	.14		8	.31		8	.47
	9	.15		9	.31		9	.48
	10	.15		10	.32		10	.49
	11	.16		11	.33		11	.49
2	0	.17	4	0	.33	6	0	.50

FEET AND PARTS TO CUBIC FEET

feet = 144 parts.

Sup. ft.	Parts	Cub. ft.	Sup. ft.	Parts	Cub. ft.	Sup. ft.	Parts	Cub. ft.
6	1	.51	8	1	.67	10	1	.84
	2	.51		2	.68		2	.85
	3	.52		3	.69		3	.85
	4	.53		4	.69		4	.86
	5	.53		5	.70		5	.87
	6	.54		6	.71		6	.88
	7	.55		7	.72		7	.88
	8	.56		8	.72		8	.89
	9	.56		9	.73		9	.90
	10	.57		10	.74		10	.90
	11	.58		11	.74		11	.91
7	0	.58	9	0	.75	11	0	.92
	1	.59		1	.76		1	.92
	2	.60		2	.76		2	.93
	3	.60		3	.77		3	.94
	4	.61		4	.78		4	.94
	5	.62		5	.78		5	.95
	6	.63		6	.79		6	.96
	7	.63		7	.80		7	.97
	8	.64		8	.81		8	.97
	9	.64		9	.81		9	.98
	10	.65		10	.82		10	.99
	11	.66		11	.83		11	.99
8	0	.67	10	0	.83	12	0	1.00

**TABLE 4.—NUMBER OF SLEEPERS TO THE LOAD OF
50 CUBIC FEET**

Dimensions of Sleepers—				Dimensions of Sleepers—			
Length	Width	Thickness	Number per Load	Length	Width	Thickness	Number per Load
ft. in.	inches	inches		ft. in.	inches	inches	
4 0	6	4	75.00	7 6	9	4½	28.70
4 6	6	4	66.60	7 6	9	5	21.38
5 0	9	4½	35.55	7 6	10	5	19.20
5 6	7	4½	41.56	8 0	8	5	22.50
6 0	8	4	37.50	8 0	8	6	18.75
6 0	8	4½	33.33	8 0	9	4½	22.22
6 0	8	5	30.00	8 0	9	5	20.00
6 0	8	7	21.43	8 0	9	6	16.66
6 6	8	4	34.62	8 0	10	5	18.00
6 6	8	4½	30.77	8 3	10	5	17.45
6 6	8	4½	30.66	8 2½	8½	4½	22.91
6 6	8	5	27.69	8 3	9	6	16.16
6 6	9	4½	27.35	8 6	9	4½	20.92
6 6	9	5	24.62	8 6	9	5	18.82
6 6	10	5	22.15	8 6	10	5	16.94
6 6	12	5	18.46	8 6	10	6	14.12
6 7	9	4½	25.58	9 0	4½	6	29.63
6 9	10	5	21.33	9 0	9	6	14.81
7 0	8	5	25.71	9 0	9½	4½	18.71
7 0	9	4½	25.40	9 0	9	7	12.70
7 0	9	5	22.88	9 0	10	5	16.00
7 0	10	5	20.57	9 0	10	6	13.33
7 0	10	6	17.14	9 6	10	5	15.16
7 0	12	5	17.14	10 0	10	5	14.40
				11 0	10	5	13.09

TABLE 5
DIAMETERS WITH CORRESPONDING
GIRTHS

Diam. ft. in.	Girth ft. in.	Diam. ft. in.	Girth ft. in.	Diam. ft. in.	Girth ft. in.
1 1/2	1-6	1 6	4 8-5	2 11 1/2	9 3-5
1	3-1	1 6 1/2	4 10-1	3 0	9 4-1
1 1/2	4-7	1 7	4 11-7	3 0 1/2	9 6-7
2	6-3	1 7 1/2	5 1-3	3 1	9 8-2
2 1/2	7-9	1 8	5 2-8	3 1 1/2	9 9-8
3	9-4	1 8 1/2	5 4-4	3 2	9 11-4
3 1/2	11-0	1 9	5 6-0	3 2 1/2	10 1-0
4	1 0-6	1 9 1/2	5 7-5	3 3	10 2-5
4 1/2	1 2-1	1 10	5 9-1	3 3 1/2	10 4-1
5	1 3-7	1 10 1/2	5 10-7	3 4	10 5-7
5 1/2	1 5-3	1 11	6 0-3	3 4 1/2	10 7-2
6	1 6-8	1 11 1/2	6 1-8	3 5	10 8-8
6 1/2	1 8-4	2 0	6 3-4	3 5 1/2	10 10-4
7	1 10-0	2 0 1/2	6 5-0	3 6	10 11-9
7 1/2	1 11-6	2 1	6 6-5	3 6 1/2	11 1-5
8	2 1-1	2 1 1/2	6 8-1	3 7	11 3-1
8 1/2	2 2-7	2 2	6 9-7	3 7 1/2	11 4-7
9	2 4-3	2 2 1/2	6 11-3	3 8	11 6-2
9 1/2	2 5-8	2 3	7 0-8	3 8 1/2	11 7-8
10	2 7-4	2 3 1/2	7 2-4	3 9	11 9-4
10 1/2	2 9-0	2 4	7 4-0	3 9 1/2	11 10-9
11	2 10-6	2 4 1/2	7 5-5	3 10	12 0-5
11 1/2	3 0-1	2 5	7 7-1	3 10 1/2	12 2-1
1 0	3 1-7	2 5 1/2	7 8-7	3 11	12 3-7
1 1 0 1/2	3 3-3	2 6	7 10-2	3 11 1/2	12 5-2
1 1 1	3 4-8	2 6 1/2	7 11-8	4 0	12 6-8
1 1 1 1/2	3 6-4	2 7	8 1-4	4 1	12 9-9
1 2	3 8-0	2 7 1/2	8 3-0	4 2	13 1-1
1 2 1/2	3 9-6	2 8	8 4-5	4 3	13 4-2
1 3	3 11-1	2 8 1/2	8 6-1	4 4	13 7-4
1 3 1/2	4 0-7	2 9	8 7-7	4 5	13 10-5
1 4	4 2-3	2 9 1/2	8 9-2	4 6	14 1-6
1 4 1/2	4 3-8	2 10	8 10-8	4 7	14 4-8
1 5	4 5-4	2 10 1/2	9 0-4	4 8	14 7-9
1 5 1/2	4 7-0	2 11	9 2-0	4 9	14 11-1

TABLE 5.—Diameters with Corresponding Girths—continued

Diam. ft. in.	Girth ft. in.	Diam. ft. in.	Girth ft. in.	Diam. ft. in.	Girth ft. in.
4 10	15 2-2	8 1	25 4-7	11 4	35 7-3
4 11	15 5-4	8 2	25 7-9	11 5	35 10-4
5 0	15 8-5	8 3	25 11-0	11 6	36 1-5
5 1	15 11-6	8 4	26 2-2	11 7	36 4-7
5 2	16 2-8	8 5	26 5-3	11 8	36 7-8
5 3	16 5-9	8 6	26 8-4	11 9	36 11-0
5 4	16 9-1	8 7	26 11-6	11 10	37 2-1
5 5	17 0-2	8 8	27 2-7	11 11	37 5-2
5 6	17 3-3	8 9	27 5-9	12 0	37 8-4
5 7	17 6-5	8 10	27 9-0	12 1	37 11-5
5 8	17 9-6	8 11	28 0-2	12 2	38 2-7
5 9	18 0-8	9 0	28 3-3	12 3	38 5-8
5 10	18 3-9	9 1	28 6-4	12 4	38 9-0
5 11	18 7-1	9 2	28 9-6	12 5	39 0-1
6 0	18 10-2	9 3	29 0-7	12 6	39 3-2
6 1	19 1-3	9 4	29 3-9	12 7	39 6-4
6 2	19 4-5	9 5	29 7-0	12 8	39 9-5
6 3	19 7-6	9 6	29 10-1	12 9	40 0-7
6 4	19 10-8	9 7	30 1-3	12 10	40 3-8
6 5	20 1-9	9 8	30 4-4	12 11	40 6-9
6 6	20 5-0	9 9	30 7-6	13 0	40 10-1
6 7	20 8-2	9 10	30 10-7	13 1	41 1-2
6 8	20 11-3	9 11	31 1-8	13 2	41 4-4
6 9	21 2-5	10 0	31 5-0	13 3	41 7-5
6 10	21 5-6	10 1	31 8-1	13 4	41 10-7
6 11	21 8-8	10 2	31 11-3	13 5	42 1-8
7 0	21 11-9	10 3	32 2-4	13 6	42 4-9
7 1	22 3-0	10 4	32 5-6	13 7	42 8-1
7 2	22 6-2	10 5	32 8-7	13 8	42 11-2
7 3	22 9-3	10 6	32 11-8	13 9	43 2-4
7 4	23 0-5	10 7	33 3-0	13 10	43 5-5
7 5	23 3-6	10 8	33 6-1	13 11	43 8-6
7 6	23 6-7	10 9	33 9-3	14 0	43 11-8
7 7	23 9-9	10 10	34 0-4	14 1	44 2-9
7 8	24 1-0	10 11	34 3-5	14 2	44 6-1
7 9	24 4-2	11 0	34 6-7	14 3	44 9-2
7 10	24 7-3	11 1	34 9-8	14 4	45 0-4
7 11	24 10-5	11 2	35 1-0	14 5	45 3-5
8 0	25 1-6	11 3	35 4-1	14 6	45 6-6

TABLE 5.—Diameters with Corresponding Girths—*continued*

Diam. ft. in.	Girth ft. in.	Diam. ft. in.	Girth ft. in.	Diam. ft. in.	Girth ft. in.
14 7	45 9·8	16 5	51 6·9	18 3	57 4·0
14 8	46 0·9	16 6	51 10·0	18 4	57 7·2
14 9	46 4·1	16 7	52 1·2	18 5	57 10·3
14 10	46 7·2	16 8	52 4·3	18 6	58 1·4
14 11	46 10·3	16 9	52 7·5	18 7	58 4·6
15 0	47 1·5	16 10	52 10·6	18 8	58 7·7
15 1	47 4·6	16 11	53 1·7	18 9	58 10·9
15 2	47 7·8	17 0	53 4·9	18 10	59 2·0
15 3	47 10·9	17 1	53 8·0	18 11	59 5·1
15 4	48 2·1	17 2	53 11·2	19 0	59 8·3
15 5	48 5·2	17 3	54 2·3	19 1	59 11·4
15 6	48 8·3	17 4	54 5·5	19 2	60 2·6
15 7	48 11·5	17 5	54 8·6	19 3	60 5·7
15 8	49 2·6	17 6	54 11·7	19 4	60 8·8
15 9	49 5·8	17 7	55 2·9	19 5	61 0·0
15 10	49 8·9	17 8	55 6·0	19 6	61 3·1
15 11	50 0·0	17 9	55 9·2	19 7	61 6·3
16 0	50 3·2	17 10	56 0·3	19 8	61 9·4
16 1	50 6·3	17 11	56 3·4	19 9	62 0·6
16 2	50 9·5	18 0	56 6·6	19 10	62 3·7
16 3	51 0·6	18 1	56 9·7	19 11	62 6·8
16 4	51 3·8	18 2	57 0·9	20 0	62 10·0