





## Flat Oval Spiral Pipe Engineering Tables

Spiral Pipe of Texas currently has the capability of producing flat oval spiral lockseam duct in 576 sizes, more than anyone else in the US. Although we can make each of those sizes, and technical data is provided below, there are some things that should be acknowledged when using this information:

1. Aspect ratio (the ratio of the major to the minor axis) is critical to both the performance and cost of ductwork. By comparing the "Equivalent Round" of various sizes as aspect ratio is increased, you can see how performance levels out as the ratio increases. This has a great effect on cost as well, since larger flat spans need more reinforcement and heavier gauges. We recommend **aspect ratios no greater than 6:1** be chosen wherever possible. This recommended range is indicated below by **bold text**.
2. Published "Flat Oval Size" is determined with a fixed minor dimension, then major axis calculated from basic round. The dimension is then rounded to the next whole number. This convention agrees with sizes of most major manufacturers, as well as those published by SPIDA and ASHRAE.
3. "Actual Size" gives the true duct major axis, including stretch from the ovalizing process.
4. "Weights" are based on nominal steel thicknesses and include the additional material in the spiral lockseam.
5. "Equivalent Round" is derived from an equation published in the 2013 ASHRAE Fundamentals Handbook, Chapter 21 "Duct Design" and widely used in the industry.

Flat Oval Size ma x MA	Basic Round	Equivalent Round	Std. Gauge	Weight (per lin.ft.)	Surface Area/Perimeter (in.)	Cross Sectional Area (in <sup>2</sup> )	Actual Size		
							ma	x	MA
<b>3 x 12</b>	<b>9</b>	<b>6.308</b>	<b>24</b>	<b>3.13</b>	<b>28.90</b>	<b>36.28</b>	<b>3</b>	<b>x</b>	<b>12.74</b>
<b>3 x 14</b>	<b>10</b>	<b>6.635</b>	<b>24</b>	<b>3.48</b>	<b>32.04</b>	<b>40.99</b>	<b>3</b>	<b>x</b>	<b>14.31</b>
<b>3 x 16</b>	<b>11</b>	<b>6.938</b>	<b>24</b>	<b>3.83</b>	<b>35.18</b>	<b>45.71</b>	<b>3</b>	<b>x</b>	<b>15.88</b>
<b>3 x 17</b>	<b>12</b>	<b>7.221</b>	<b>24</b>	<b>4.18</b>	<b>38.32</b>	<b>50.42</b>	<b>3</b>	<b>x</b>	<b>17.45</b>
3 x 19	13	7.486	24	4.52	41.47	55.13	3	x	19.02
3 x 20	14	7.738	24	4.87	44.61	59.84	3	x	20.59
3 x 22	15	7.976	24	5.22	47.75	64.55	3	x	22.16
3 x 23	16	8.204	24	5.57	50.89	69.27	3	x	23.73
3 x 25	17	8.421	22	7.20	54.03	73.98	3	x	25.30
3 x 27	18	8.630	22	7.62	57.17	78.69	3	x	26.87
3 x 28	19	8.830	22	8.04	60.32	83.40	3	x	28.45
3 x 30	20	9.023	22	8.47	63.46	88.12	3	x	30.02
3 x 31	21	9.210	22	8.89	66.60	92.83	3	x	31.59
3 x 33	22	9.391	22	9.31	69.74	97.54	3	x	33.16
3 x 34	23	9.566	22	9.74	72.88	102.25	3	x	34.73
3 x 36	24	9.736	22	10.16	76.02	106.97	3	x	36.30
3 x 38	25	9.901	22	10.58	79.17	111.68	3	x	37.87
3 x 39	26	10.062	22	11.01	82.31	116.39	3	x	39.44
3 x 42	28	10.371	22	11.85	88.59	125.82	3	x	42.58
3 x 45	30	10.666	22	12.70	94.87	135.24	3	x	45.72
3 x 49	32	10.947	20	15.95	101.16	144.67	3	x	48.87
3 x 52	34	11.218	20	16.95	107.44	154.09	3	x	52.01
3 x 55	36	11.477	20	17.95	113.72	163.52	3	x	55.15
3 x 58	38	11.728	20	18.95	120.01	172.94	3	x	58.29
3 x 61	40	11.970	20	19.94	126.29	182.36	3	x	61.43
3 x 64	42	12.203	20	20.94	132.57	191.79	3	x	64.57
3 x 67	44	12.430	20	21.94	138.86	201.21	3	x	67.72
3 x 71	46	12.650	18	29.86	145.14	210.64	3	x	70.86
3 x 74	48	12.864	18	31.16	151.42	220.06	3	x	74.00

Flat Oval Size			Basic Round	Equivalent Round	Std. Gauge	Weight (per lin.ft.)	Surface Area/Perimeter (in.)	Cross Sectional Area (in <sup>2</sup> )	Actual Size		
ma	x	MA							ma	x	MA
3	x	77	50	13.072	18	32.46	157.71	229.49	3	x	77.14
<b>4</b>	<b>x</b>	<b>12</b>	<b>9</b>	<b>7.240</b>	<b>24</b>	<b>3.13</b>	<b>28.90</b>	<b>45.23</b>	<b>4</b>	<b>x</b>	<b>12.17</b>
4	x	13	10	7.654	24	3.48	32.04	51.52	4	x	13.74
4	x	15	11	8.034	24	3.83	35.18	57.80	4	x	15.31
4	x	17	12	8.388	24	4.18	38.32	64.08	4	x	16.88
4	x	18	13	8.720	24	4.52	41.47	70.37	4	x	18.45
4	x	20	14	9.032	24	4.87	44.61	76.65	4	x	20.02
4	x	21	15	9.328	24	5.22	47.75	82.93	4	x	21.59
4	x	23	16	9.609	24	5.57	50.89	89.21	4	x	23.16
4	x	24	17	9.878	24	5.92	54.03	95.50	4	x	24.73
4	x	26	18	10.135	22	7.62	57.17	101.78	4	x	26.30
4	x	28	19	10.382	22	8.04	60.32	108.06	4	x	27.87
4	x	29	20	10.619	22	8.47	63.46	114.35	4	x	29.45
4	x	31	21	10.849	22	8.89	66.60	120.63	4	x	31.02
4	x	32	22	11.070	22	9.31	69.74	126.91	4	x	32.59
4	x	34	23	11.285	22	9.74	72.88	133.20	4	x	34.16
4	x	35	24	11.493	22	10.16	76.02	139.48	4	x	35.73
4	x	37	25	11.694	22	10.58	79.17	145.76	4	x	37.30
4	x	39	26	11.891	22	11.01	82.31	152.05	4	x	38.87
4	x	42	28	12.268	22	11.85	88.59	164.61	4	x	42.01
4	x	45	30	12.627	22	12.70	94.87	177.18	4	x	45.15
4	x	48	32	12.970	22	13.55	101.16	189.75	4	x	48.29
4	x	51	34	13.299	20	16.95	107.44	202.31	4	x	51.44
4	x	54	36	13.614	20	17.95	113.72	214.88	4	x	54.58
4	x	57	38	13.918	20	18.95	120.01	227.45	4	x	57.72
4	x	61	40	14.211	20	19.94	126.29	240.01	4	x	60.86
4	x	64	42	14.495	20	20.94	132.57	252.58	4	x	64.00
4	x	67	44	14.770	20	21.94	138.86	265.14	4	x	67.14
4	x	70	46	15.036	20	22.93	145.14	277.71	4	x	70.29
4	x	73	48	15.295	18	31.16	151.42	290.28	4	x	73.43
4	x	76	50	15.546	18	32.46	157.71	302.84	4	x	76.57
<b>5</b>	<b>x</b>	<b>13</b>	<b>10</b>	<b>8.460</b>	<b>24</b>	<b>3.48</b>	<b>32.04</b>	<b>60.47</b>	<b>5</b>	<b>x</b>	<b>13.17</b>
5	x	14	11	8.920	24	3.83	35.18	68.32	5	x	14.74
5	x	16	12	9.345	24	4.18	38.32	76.18	5	x	16.31
5	x	18	13	9.743	24	4.52	41.47	84.03	5	x	17.88
5	x	19	14	10.116	24	4.87	44.61	91.88	5	x	19.45
5	x	21	15	10.468	24	5.22	47.75	99.74	5	x	21.02
5	x	22	16	10.803	24	5.57	50.89	107.59	5	x	22.59
5	x	24	17	11.121	24	5.92	54.03	115.45	5	x	24.16
5	x	25	18	11.426	22	7.62	57.17	123.30	5	x	25.73
5	x	27	19	11.718	22	8.04	60.32	131.15	5	x	27.30
5	x	29	20	11.998	22	8.47	63.46	139.01	5	x	28.87
5	x	30	21	12.268	22	8.89	66.60	146.86	5	x	30.45
5	x	32	22	12.529	22	9.31	69.74	154.72	5	x	32.02
5	x	33	23	12.781	22	9.74	72.88	162.57	5	x	33.59
5	x	35	24	13.026	22	10.16	76.02	170.42	5	x	35.16
5	x	36	25	13.263	22	10.58	79.17	178.28	5	x	36.73
5	x	38	26	13.493	22	11.01	82.31	186.13	5	x	38.30
5	x	41	28	13.935	22	11.85	88.59	201.84	5	x	41.44
5	x	44	30	14.355	22	12.70	94.87	217.55	5	x	44.58
5	x	47	32	14.756	22	13.55	101.16	233.26	5	x	47.72
5	x	51	34	15.140	20	16.95	107.44	248.96	5	x	50.87
5	x	54	36	15.508	20	17.95	113.72	264.67	5	x	54.01
5	x	57	38	15.863	20	18.95	120.01	280.38	5	x	57.15
5	x	60	40	16.204	20	19.94	126.29	296.09	5	x	60.29

Flat Oval Size			Basic Round	Equivalent Round	Std. Gauge	Weight (per lin.ft.)	Surface Area/Perimeter (in.)	Cross Sectional Area (in <sup>2</sup> )	Actual Size		
ma	x	MA							ma	x	MA
5	x	63	42	16.534	20	20.94	132.57	311.80	5	x	63.43
5	x	66	44	16.854	20	21.94	138.86	327.50	5	x	66.57
5	x	69	46	17.164	20	22.93	145.14	343.21	5	x	69.72
5	x	73	48	17.465	18	31.16	151.42	358.92	5	x	72.86
5	x	76	50	17.757	18	32.46	157.71	374.63	5	x	76.00
5	x	79	52	18.042	18	33.75	163.99	390.34	5	x	79.14
<b>6 x 14</b>											
6	x	14	11	9.633	24	3.83	35.18	77.27	6	x	14.17
6	x	15	12	10.133	24	4.18	38.32	86.70	6	x	15.74
6	x	17	13	10.597	24	4.52	41.47	96.12	6	x	17.31
6	x	19	14	11.032	24	4.87	44.61	105.55	6	x	18.88
6	x	20	15	11.441	24	5.22	47.75	114.97	6	x	20.45
6	x	22	16	11.828	24	5.57	50.89	124.40	6	x	22.02
6	x	23	17	12.197	24	5.92	54.03	133.82	6	x	23.59
6	x	25	18	12.548	22	7.62	57.17	143.25	6	x	25.16
6	x	26	19	12.885	22	8.04	60.32	152.67	6	x	26.73
6	x	28	20	13.207	22	8.47	63.46	162.10	6	x	28.30
6	x	30	21	13.518	22	8.89	66.60	171.52	6	x	29.87
6	x	31	22	13.817	22	9.31	69.74	180.95	6	x	31.45
6	x	33	23	14.107	22	9.74	72.88	190.37	6	x	33.02
6	x	34	24	14.387	22	10.16	76.02	199.80	6	x	34.59
6	x	36	25	14.658	22	10.58	79.17	209.22	6	x	36.16
6	x	37	26	14.921	22	11.01	82.31	218.65	6	x	37.73
6	x	41	28	15.427	22	11.85	88.59	237.50	6	x	40.87
6	x	44	30	15.906	22	12.70	94.87	256.34	6	x	44.01
6	x	47	32	16.363	22	13.55	101.16	275.19	6	x	47.15
6	x	50	34	16.800	20	16.95	107.44	294.04	6	x	50.29
6	x	53	36	17.218	20	17.95	113.72	312.89	6	x	53.44
6	x	56	38	17.621	20	18.95	120.01	331.74	6	x	56.58
6	x	59	40	18.009	20	19.94	126.29	350.59	6	x	59.72
6	x	63	42	18.384	20	20.94	132.57	369.44	6	x	62.86
6	x	66	44	18.746	20	21.94	138.86	388.29	6	x	66.00
6	x	69	46	19.098	20	22.93	145.14	407.14	6	x	69.14
6	x	72	48	19.438	18	31.16	151.42	425.99	6	x	72.29
6	x	75	50	19.770	18	32.46	157.71	444.84	6	x	75.43
6	x	78	52	20.092	18	33.75	163.99	463.69	6	x	78.57
6	x	81	54	20.406	18	35.05	170.27	482.54	6	x	81.71
6	x	85	56	20.712	18	36.35	176.55	501.39	6	x	84.85
<b>8 x 14</b>											
8	x	14	12	11.287	24	4.18	38.32	103.03	8	x	14.60
8	x	16	13	11.892	24	4.52	41.47	115.60	8	x	16.17
8	x	17	14	12.455	24	4.87	44.61	128.16	8	x	17.74
8	x	19	15	12.982	24	5.22	47.75	140.73	8	x	19.31
8	x	21	16	13.478	24	5.57	50.89	153.30	8	x	20.88
8	x	22	17	13.948	24	5.92	54.03	165.86	8	x	22.45
8	x	24	18	14.395	24	6.26	57.17	178.43	8	x	24.02
8	x	25	19	14.821	22	8.04	60.32	191.00	8	x	25.59
8	x	27	20	15.228	22	8.47	63.46	203.56	8	x	27.16
8	x	28	21	15.619	22	8.89	66.60	216.13	8	x	28.73
8	x	30	22	15.995	22	9.31	69.74	228.70	8	x	30.30
8	x	32	23	16.358	22	9.74	72.88	241.26	8	x	31.87
8	x	33	24	16.708	22	10.16	76.02	253.83	8	x	33.45
8	x	35	25	17.047	22	10.58	79.17	266.39	8	x	35.02
8	x	36	26	17.376	22	11.01	82.31	278.96	8	x	36.59
8	x	39	28	18.004	22	11.85	88.59	304.09	8	x	39.73
8	x	43	30	18.599	22	12.70	94.87	329.23	8	x	42.87
8	x	46	32	19.164	22	13.55	101.16	354.36	8	x	46.01

Flat Oval Size			Basic Round	Equivalent Round	Std. Gauge	Weight (per lin.ft.)	Surface Area/Perimeter (in.)	Cross Sectional Area (in <sup>2</sup> )	Actual Size		
ma	x	MA							ma	x	MA
8	x	49	34	19.703	20	16.95	107.44	379.49	8	x	49.15
8	x	52	36	20.220	20	17.95	113.72	404.62	8	x	52.29
8	x	55	38	20.716	20	18.95	120.01	429.76	8	x	55.44
8	x	58	40	21.192	20	19.94	126.29	454.89	8	x	58.58
8	x	61	42	21.652	20	20.94	132.57	480.02	8	x	61.72
8	x	65	44	22.097	20	21.94	138.86	505.16	8	x	64.86
8	x	68	46	22.527	20	22.93	145.14	530.29	8	x	68.00
8	x	71	48	22.944	18	31.16	151.42	555.42	8	x	71.14
8	x	74	50	23.349	18	32.46	157.71	580.55	8	x	74.29
8	x	77	52	23.743	18	33.75	163.99	605.69	8	x	77.43
8	x	80	54	24.126	18	35.05	170.27	630.82	8	x	80.57
8	x	83	56	24.500	18	36.35	176.55	655.95	8	x	83.71
<b>10 x 15</b>											
10	x	15	13	12.723	24	4.52	41.47	128.79	10	x	15.02
10	x	16	14	13.424	24	4.87	44.61	144.50	10	x	16.60
10	x	18	15	14.077	24	5.22	47.75	160.21	10	x	18.17
10	x	19	16	14.689	24	5.57	50.89	175.91	10	x	19.74
10	x	21	17	15.265	24	5.92	54.03	191.62	10	x	21.31
10	x	23	18	15.810	24	6.26	57.17	207.33	10	x	22.88
10	x	24	19	16.329	24	6.61	60.32	223.04	10	x	24.45
10	x	26	20	16.824	22	8.47	63.46	238.75	10	x	26.02
10	x	27	21	17.297	22	8.89	66.60	254.45	10	x	27.59
10	x	29	22	17.751	22	9.31	69.74	270.16	10	x	29.16
10	x	30	23	18.188	22	9.74	72.88	285.87	10	x	30.73
10	x	32	24	18.609	22	10.16	76.02	301.58	10	x	32.30
10	x	34	25	19.015	22	10.58	79.17	317.29	10	x	33.87
10	x	35	26	19.409	22	11.01	82.31	332.99	10	x	35.45
10	x	38	28	20.159	22	11.85	88.59	364.41	10	x	38.59
10	x	41	30	20.868	22	12.70	94.87	395.83	10	x	41.73
10	x	45	32	21.540	22	13.55	101.16	427.24	10	x	44.87
10	x	48	34	22.180	22	14.39	107.44	458.66	10	x	48.01
10	x	51	36	22.792	20	17.95	113.72	490.07	10	x	51.15
10	x	54	38	23.378	20	18.95	120.01	521.49	10	x	54.29
10	x	57	40	23.941	20	19.94	126.29	552.91	10	x	57.44
10	x	60	42	24.484	20	20.94	132.57	584.32	10	x	60.58
10	x	63	44	25.007	20	21.94	138.86	615.74	10	x	63.72
10	x	67	46	25.513	20	22.93	145.14	647.15	10	x	66.86
10	x	70	48	26.003	20	23.93	151.42	678.57	10	x	70.00
10	x	73	50	26.479	18	32.46	157.71	709.99	10	x	73.14
10	x	76	52	26.941	18	33.75	163.99	741.40	10	x	76.29
10	x	79	54	27.390	18	35.05	170.27	772.82	10	x	79.43
10	x	82	56	27.828	18	36.35	176.55	804.23	10	x	82.57
10	x	85	58	28.254	18	37.65	182.84	835.65	10	x	85.71
<b>12 x 17</b>											
12	x	17	15	14.791	24	5.22	47.75	173.40	12	x	17.02
12	x	18	16	15.527	24	5.57	50.89	192.25	12	x	18.60
12	x	20	17	16.217	24	5.92	54.03	211.10	12	x	20.17
12	x	21	18	16.867	24	6.26	57.17	229.95	12	x	21.74
12	x	23	19	17.483	24	6.61	60.32	248.79	12	x	23.31
12	x	25	20	18.069	22	8.47	63.46	267.64	12	x	24.88
12	x	26	21	18.628	22	8.89	66.60	286.49	12	x	26.45
12	x	28	22	19.163	22	9.31	69.74	305.34	12	x	28.02
12	x	29	23	19.676	22	9.74	72.88	324.19	12	x	29.59
12	x	31	24	20.169	22	10.16	76.02	343.04	12	x	31.16
12	x	32	25	20.645	22	10.58	79.17	361.89	12	x	32.73
12	x	34	26	21.104	22	11.01	82.31	380.74	12	x	34.30
12	x	37	28	21.979	22	11.85	88.59	418.44	12	x	37.45

Flat Oval Size			Basic Round	Equivalent Round	Std. Gauge	Weight (per lin.ft.)	Surface Area/Perimeter (in.)	Cross Sectional Area (in <sup>2</sup> )	Actual Size		
ma	x	MA							ma	x	MA
12	x	40	30	22.803	22	12.70	94.87	456.14	12	x	40.59
12	x	43	32	23.582	22	13.55	101.16	493.84	12	x	43.73
12	x	47	34	24.322	22	14.39	107.44	531.54	12	x	46.87
12	x	50	36	25.028	20	17.95	113.72	569.24	12	x	50.01
12	x	53	38	25.704	20	18.95	120.01	606.94	12	x	53.15
12	x	56	40	26.352	20	19.94	126.29	644.64	12	x	56.29
12	x	59	42	26.975	20	20.94	132.57	682.34	12	x	59.44
12	x	62	44	27.576	20	21.94	138.86	720.03	12	x	62.58
12	x	65	46	28.157	20	22.93	145.14	757.73	12	x	65.72
12	x	69	48	28.719	20	23.93	151.42	795.43	12	x	68.86
12	x	72	50	29.263	18	32.46	157.71	833.13	12	x	72.00
12	x	75	52	29.791	18	33.75	163.99	870.83	12	x	75.14
12	x	78	54	30.305	18	35.05	170.27	908.53	12	x	78.29
12	x	81	56	30.804	18	36.35	176.55	946.23	12	x	81.43
12	x	84	58	31.291	18	37.65	182.84	983.93	12	x	84.57
14	x	17	16	16.029	24	5.57	50.89	202.30	14	x	17.45
14	x	19	17	16.843	24	5.92	54.03	224.29	14	x	19.02
14	x	20	18	17.607	24	6.26	57.17	246.28	14	x	20.60
14	x	22	19	18.327	24	6.61	60.32	268.27	14	x	22.17
14	x	23	20	19.009	24	6.96	63.46	290.26	14	x	23.74
14	x	25	21	19.658	22	8.89	66.60	312.25	14	x	25.31
14	x	27	22	20.277	22	9.31	69.74	334.24	14	x	26.88
14	x	28	23	20.869	22	9.74	72.88	356.23	14	x	28.45
14	x	30	24	21.438	22	10.16	76.02	378.23	14	x	30.02
14	x	31	25	21.985	22	10.58	79.17	400.22	14	x	31.59
14	x	33	26	22.513	22	11.01	82.31	422.21	14	x	33.16
14	x	36	28	23.515	22	11.85	88.59	466.19	14	x	36.30
14	x	39	30	24.455	22	12.70	94.87	510.17	14	x	39.45
14	x	42	32	25.343	22	13.55	101.16	554.16	14	x	42.59
14	x	45	34	26.184	22	14.39	107.44	598.14	14	x	45.73
14	x	49	36	26.985	20	17.95	113.72	642.12	14	x	48.87
14	x	52	38	27.751	20	18.95	120.01	686.10	14	x	52.01
14	x	55	40	28.484	20	19.94	126.29	730.08	14	x	55.15
14	x	58	42	29.188	20	20.94	132.57	774.07	14	x	58.29
14	x	61	44	29.866	20	21.94	138.86	818.05	14	x	61.44
14	x	64	46	30.520	20	22.93	145.14	862.03	14	x	64.58
14	x	67	48	31.153	20	23.93	151.42	906.01	14	x	67.72
14	x	71	50	31.765	18	32.46	157.71	950.00	14	x	70.86
14	x	74	52	32.359	18	33.75	163.99	993.98	14	x	74.00
14	x	77	54	32.935	18	35.05	170.27	1037.96	14	x	77.14
14	x	80	56	33.496	18	36.35	176.55	1081.94	14	x	80.29
14	x	83	58	34.042	18	37.65	182.84	1125.93	14	x	83.43
14	x	86	60	34.573	18	38.95	189.12	1169.91	14	x	86.57
16	x	19	18	18.052	24	6.26	57.17	256.33	16	x	19.45
16	x	21	19	18.885	24	6.61	60.32	281.46	16	x	21.02
16	x	22	20	19.670	24	6.96	63.46	306.59	16	x	22.60
16	x	24	21	20.415	24	7.31	66.60	331.73	16	x	24.17
16	x	25	22	21.124	22	9.31	69.74	356.86	16	x	25.74
16	x	27	23	21.800	22	9.74	72.88	381.99	16	x	27.31
16	x	29	24	22.448	22	10.16	76.02	407.12	16	x	28.88
16	x	30	25	23.069	22	10.58	79.17	432.26	16	x	30.45
16	x	32	26	23.668	22	11.01	82.31	457.39	16	x	32.02
16	x	35	28	24.801	22	11.85	88.59	507.66	16	x	35.16
16	x	38	30	25.862	22	12.70	94.87	557.92	16	x	38.30
16	x	41	32	26.860	22	13.55	101.16	608.19	16	x	41.45

Flat Oval Size			Basic Round	Equivalent Round	Std. Gauge	Weight (per lin.ft.)	Surface Area/Perimeter (in.)	Cross Sectional Area (in <sup>2</sup> )	Actual Size		
ma	x	MA							ma	x	MA
16	x	44	34	27.805	22	14.39	107.44	658.45	16	x	44.59
16	x	47	36	28.702	22	15.24	113.72	708.72	16	x	47.73
16	x	51	38	29.558	20	18.95	120.01	758.98	16	x	50.87
16	x	54	40	30.377	20	19.94	126.29	809.25	16	x	54.01
16	x	57	42	31.162	20	20.94	132.57	859.52	16	x	57.15
16	x	60	44	31.917	20	21.94	138.86	909.78	16	x	60.29
16	x	63	46	32.645	20	22.93	145.14	960.05	16	x	63.44
16	x	66	48	33.348	20	23.93	151.42	1010.31	16	x	66.58
16	x	69	50	34.028	20	24.93	157.71	1060.58	16	x	69.72
16	x	73	52	34.687	18	33.75	163.99	1110.84	16	x	72.86
16	x	76	54	35.326	18	35.05	170.27	1161.11	16	x	76.00
16	x	79	56	35.947	18	36.35	176.55	1211.37	16	x	79.14
16	x	82	58	36.551	18	37.65	182.84	1261.64	16	x	82.29
16	x	85	60	37.139	18	38.95	189.12	1311.91	16	x	85.43
16	x	88	62	37.713	18	40.24	195.40	1362.17	16	x	88.57
18	x	21	20	20.071	24	6.96	63.46	316.64	18	x	21.45
18	x	23	21	20.919	24	7.31	66.60	344.92	18	x	23.02
18	x	24	22	21.723	24	7.66	69.74	373.19	18	x	24.60
18	x	26	23	22.488	22	9.74	72.88	401.47	18	x	26.17
18	x	27	24	23.219	22	10.16	76.02	429.74	18	x	27.74
18	x	29	25	23.919	22	10.58	79.17	458.02	18	x	29.31
18	x	31	26	24.591	22	11.01	82.31	486.29	18	x	30.88
18	x	34	28	25.862	22	11.85	88.59	542.84	18	x	34.02
18	x	37	30	27.047	22	12.70	94.87	599.39	18	x	37.16
18	x	40	32	28.159	22	13.55	101.16	655.94	18	x	40.30
18	x	43	34	29.210	22	14.39	107.44	712.49	18	x	43.45
18	x	46	36	30.205	22	15.24	113.72	769.03	18	x	46.59
18	x	49	38	31.153	20	18.95	120.01	825.58	18	x	49.73
18	x	53	40	32.059	20	19.94	126.29	882.13	18	x	52.87
18	x	56	42	32.926	20	20.94	132.57	938.68	18	x	56.01
18	x	59	44	33.759	20	21.94	138.86	995.23	18	x	59.15
18	x	62	46	34.561	20	22.93	145.14	1051.78	18	x	62.29
18	x	65	48	35.335	20	23.93	151.42	1108.33	18	x	65.44
18	x	68	50	36.082	20	24.93	157.71	1164.88	18	x	68.58
18	x	71	52	36.806	18	33.75	163.99	1221.42	18	x	71.72
18	x	75	54	37.508	18	35.05	170.27	1277.97	18	x	74.86
18	x	78	56	38.189	18	36.35	176.55	1334.52	18	x	78.00
18	x	81	58	38.852	18	37.65	182.84	1391.07	18	x	81.14
18	x	84	60	39.496	18	38.95	189.12	1447.62	18	x	84.29
18	x	87	62	40.124	18	40.24	195.40	1504.17	18	x	87.43
18	x	90	64	40.737	18	41.54	201.69	1560.72	18	x	90.57
20	x	23	22	22.087	24	7.66	69.74	383.24	20	x	23.45
20	x	25	23	22.947	22	9.74	72.88	414.66	20	x	25.02
20	x	26	24	23.767	22	10.16	76.02	446.07	20	x	26.60
20	x	28	25	24.550	22	10.58	79.17	477.49	20	x	28.17
20	x	29	26	25.300	22	11.01	82.31	508.91	20	x	29.74
20	x	33	28	26.714	22	11.85	88.59	571.74	20	x	32.88
20	x	36	30	28.028	22	12.70	94.87	634.57	20	x	36.02
20	x	39	32	29.259	22	13.55	101.16	697.40	20	x	39.16
20	x	42	34	30.418	22	14.39	107.44	760.23	20	x	42.30
20	x	45	36	31.515	22	15.24	113.72	823.07	20	x	45.45
20	x	48	38	32.557	22	16.09	120.01	885.90	20	x	48.59
20	x	51	40	33.551	20	19.94	126.29	948.73	20	x	51.73
20	x	55	42	34.502	20	20.94	132.57	1011.56	20	x	54.87
20	x	58	44	35.413	20	21.94	138.86	1074.39	20	x	58.01

Flat Oval Size			Basic Round	Equivalent Round	Std. Gauge	Weight (per lin.ft.)	Surface Area/Perimeter (in.)	Cross Sectional Area (in <sup>2</sup> )	Actual Size		
ma	x	MA							ma	x	MA
20	x	61	46	36.290	20	22.93	145.14	1137.23	20	x	61.15
20	x	64	48	37.135	20	23.93	151.42	1200.06	20	x	64.29
20	x	67	50	37.951	20	24.93	157.71	1262.89	20	x	67.44
20	x	70	52	38.740	20	25.93	163.99	1325.72	20	x	70.58
20	x	73	54	39.505	18	35.05	170.27	1388.55	20	x	73.72
20	x	77	56	40.246	18	36.35	176.55	1451.39	20	x	76.86
20	x	80	58	40.967	18	37.65	182.84	1514.22	20	x	80.00
20	x	83	60	41.668	18	38.95	189.12	1577.05	20	x	83.14
20	x	86	62	42.350	18	40.24	195.40	1639.88	20	x	86.29
20	x	89	64	43.016	18	41.54	201.69	1702.71	20	x	89.43
20	x	92	66	43.665	18	42.84	207.97	1765.55	20	x	92.57
20	x	95	68	44.299	18	44.14	214.25	1828.38	20	x	95.71
20	x	99	70	44.918	18	45.44	220.54	1891.21	20	x	98.85
20	x	102	72	45.524	18	46.74	226.82	1954.04	20	x	101.99
20	x	105	74	46.118	18	48.03	233.10	2016.87	20	x	105.14
20	x	108	76	46.699	18	49.33	239.39	2079.71	20	x	108.28
20	x	111	78	47.269	18	50.63	245.67	2142.54	20	x	111.42
20	x	114	80	47.828	18	51.93	251.95	2205.37	20	x	114.56
20	x	117	82	48.376	18	53.23	258.24	2268.20	20	x	117.70
20	x	121	84	48.914	18	54.52	264.52	2331.03	20	x	120.84
20	x	124	86	49.443	18	55.82	270.80	2393.87	20	x	123.99
20	x	127	88	49.963	18	57.12	277.09	2456.70	20	x	127.13
22	x	25	24	24.100	22	10.16	76.02	456.12	22	x	25.45
22	x	27	25	24.972	22	10.58	79.17	490.68	22	x	27.02
22	x	28	26	25.805	22	11.01	82.31	525.24	22	x	28.60
22	x	31	28	27.369	22	11.85	88.59	594.35	22	x	31.74
22	x	35	30	28.819	22	12.70	94.87	663.47	22	x	34.88
22	x	38	32	30.173	22	13.55	101.16	732.58	22	x	38.02
22	x	41	34	31.445	22	14.39	107.44	801.70	22	x	41.16
22	x	44	36	32.646	22	15.24	113.72	870.82	22	x	44.30
22	x	47	38	33.784	22	16.09	120.01	939.93	22	x	47.45
22	x	50	40	34.869	20	19.94	126.29	1009.05	22	x	50.59
22	x	53	42	35.904	20	20.94	132.57	1078.16	22	x	53.73
22	x	57	44	36.896	20	21.94	138.86	1147.28	22	x	56.87
22	x	60	46	37.849	20	22.93	145.14	1216.39	22	x	60.01
22	x	63	48	38.766	20	23.93	151.42	1285.51	22	x	63.15
22	x	66	50	39.651	20	24.93	157.71	1354.62	22	x	66.29
22	x	69	52	40.506	20	25.93	163.99	1423.74	22	x	69.44
22	x	72	54	41.334	18	35.05	170.27	1492.85	22	x	72.58
22	x	75	56	42.136	18	36.35	176.55	1561.97	22	x	75.72
22	x	79	58	42.915	18	37.65	182.84	1631.08	22	x	78.86
22	x	82	60	43.673	18	38.95	189.12	1700.20	22	x	82.00
22	x	85	62	44.410	18	40.24	195.40	1769.31	22	x	85.14
22	x	88	64	45.127	18	41.54	201.69	1838.43	22	x	88.29
22	x	91	66	45.828	18	42.84	207.97	1907.54	22	x	91.43
22	x	94	68	46.511	18	44.14	214.25	1976.66	22	x	94.57
22	x	97	70	47.179	18	45.44	220.54	2045.77	22	x	97.71
22	x	101	72	47.832	18	46.74	226.82	2114.89	22	x	100.85
22	x	104	74	48.471	18	48.03	233.10	2184.00	22	x	103.99
22	x	107	76	49.096	18	49.33	239.39	2253.12	22	x	107.14
22	x	110	78	49.709	18	50.63	245.67	2322.23	22	x	110.28
22	x	113	80	50.310	18	51.93	251.95	2391.35	22	x	113.42
22	x	116	82	50.899	18	53.23	258.24	2460.46	22	x	116.56
22	x	119	84	51.478	18	54.52	264.52	2529.58	22	x	119.70
22	x	123	86	52.046	18	55.82	270.80	2598.70	22	x	122.84
22	x	126	88	52.605	18	57.12	277.09	2667.81	22	x	125.99



Flat Oval Size			Basic Round	Equivalent Round	Std. Gauge	Weight (per lin.ft.)	Surface Area/Perimeter (in.)	Cross Sectional Area (in <sup>2</sup> )	Actual Size		
ma	x	MA							ma	x	MA
22	x	129	90	53.154	18	58.42	283.37	2736.93	22	x	129.13
24	x	27	26	26.112	22	11.01	82.31	535.29	24	x	27.45
24	x	30	28	27.837	22	11.85	88.59	610.69	24	x	30.60
24	x	33	30	29.429	22	12.70	94.87	686.09	24	x	33.74
24	x	37	32	30.912	22	13.55	101.16	761.48	24	x	36.88
24	x	40	34	32.300	22	14.39	107.44	836.88	24	x	40.02
24	x	43	36	33.609	22	15.24	113.72	912.28	24	x	43.16
24	x	46	38	34.847	22	16.09	120.01	987.68	24	x	46.30
24	x	49	40	36.024	20	19.94	126.29	1063.08	24	x	49.45
24	x	52	42	37.147	20	20.94	132.57	1138.48	24	x	52.59
24	x	55	44	38.221	20	21.94	138.86	1213.87	24	x	55.73
24	x	59	46	39.251	20	22.93	145.14	1289.27	24	x	58.87
24	x	62	48	40.242	20	23.93	151.42	1364.67	24	x	62.01
24	x	65	50	41.196	20	24.93	157.71	1440.07	24	x	65.15
24	x	68	52	42.118	20	25.93	163.99	1515.47	24	x	68.29
24	x	71	54	43.010	18	35.05	170.27	1590.87	24	x	71.44
24	x	74	56	43.873	18	36.35	176.55	1666.26	24	x	74.58
24	x	77	58	44.711	18	37.65	182.84	1741.66	24	x	77.72
24	x	81	60	45.525	18	38.95	189.12	1817.06	24	x	80.86
24	x	84	62	46.317	18	40.24	195.40	1892.46	24	x	84.00
24	x	87	64	47.088	18	41.54	201.69	1967.86	24	x	87.14
24	x	90	66	47.839	18	42.84	207.97	2043.26	24	x	90.29
24	x	93	68	48.572	18	44.14	214.25	2118.66	24	x	93.43
24	x	96	70	49.288	18	45.44	220.54	2194.05	24	x	96.57
24	x	99	72	49.988	18	46.74	226.82	2269.45	24	x	99.71
24	x	103	74	50.672	18	48.03	233.10	2344.85	24	x	102.85
24	x	106	76	51.342	18	49.33	239.39	2420.25	24	x	105.99
24	x	109	78	51.998	18	50.63	245.67	2495.65	24	x	109.14
24	x	112	80	52.641	18	51.93	251.95	2571.05	24	x	112.28
24	x	115	82	53.271	18	53.23	258.24	2646.44	24	x	115.42
24	x	118	84	53.890	18	54.52	264.52	2721.84	24	x	118.56
24	x	121	86	54.497	18	55.82	270.80	2797.24	24	x	121.70
24	x	125	88	55.094	18	57.12	277.09	2872.64	24	x	124.84
24	x	128	90	55.680	18	58.42	283.37	2948.04	24	x	127.99
26	x	29	28	28.122	22	11.85	88.59	620.74	26	x	29.45
26	x	32	30	29.865	22	12.70	94.87	702.42	26	x	32.60
26	x	35	32	31.482	22	13.55	101.16	784.10	26	x	35.74
26	x	39	34	32.993	22	14.39	107.44	865.78	26	x	38.88
26	x	42	36	34.413	22	15.24	113.72	947.46	26	x	42.02
26	x	45	38	35.754	22	16.09	120.01	1029.15	26	x	45.16
26	x	48	40	37.027	22	16.93	126.29	1110.83	26	x	48.30
26	x	51	42	38.239	20	20.94	132.57	1192.51	26	x	51.45
26	x	54	44	39.397	20	21.94	138.86	1274.19	26	x	54.59
26	x	57	46	40.506	20	22.93	145.14	1355.87	26	x	57.73
26	x	61	48	41.572	20	23.93	151.42	1437.55	26	x	60.87
26	x	64	50	42.598	20	24.93	157.71	1519.23	26	x	64.01
26	x	67	52	43.587	20	25.93	163.99	1600.92	26	x	67.15
26	x	70	54	44.543	20	26.92	170.27	1682.60	26	x	70.29
26	x	73	56	45.469	18	36.35	176.55	1764.28	26	x	73.44
26	x	76	58	46.366	18	37.65	182.84	1845.96	26	x	76.58
26	x	79	60	47.238	18	38.95	189.12	1927.64	26	x	79.72
26	x	83	62	48.084	18	40.24	195.40	2009.32	26	x	82.86
26	x	86	64	48.908	18	41.54	201.69	2091.01	26	x	86.00
26	x	89	66	49.711	18	42.84	207.97	2172.69	26	x	89.14
26	x	92	68	50.494	18	44.14	214.25	2254.37	26	x	92.29

Flat Oval Size			Basic Round	Equivalent Round	Std. Gauge	Weight (per lin.ft.)	Surface Area/Perimeter (in.)	Cross Sectional Area (in <sup>2</sup> )	Actual Size		
ma	x	MA							ma	x	MA
26	x	95	70	51.258	18	45.44	220.54	2336.05	26	x	95.43
26	x	98	72	52.005	18	46.74	226.82	2417.73	26	x	98.57
26	x	101	74	52.734	18	48.03	233.10	2499.41	26	x	101.71
26	x	105	76	53.448	18	49.33	239.39	2581.10	26	x	104.85
26	x	108	78	54.147	18	50.63	245.67	2662.78	26	x	107.99
26	x	111	80	54.832	18	51.93	251.95	2744.46	26	x	111.14
26	x	114	82	55.504	18	53.23	258.24	2826.14	26	x	114.28
26	x	117	84	56.163	18	54.52	264.52	2907.82	26	x	117.42
26	x	120	86	56.809	18	55.82	270.80	2989.50	26	x	120.56
26	x	123	88	57.444	18	57.12	277.09	3071.19	26	x	123.70
26	x	127	90	58.068	18	58.42	283.37	3152.87	26	x	126.84
28	x	31	30	30.132	22	12.70	94.87	712.47	28	x	31.45
28	x	34	32	31.891	22	13.55	101.16	800.43	28	x	34.60
28	x	37	34	33.529	22	14.39	107.44	888.40	28	x	37.74
28	x	41	36	35.065	22	15.24	113.72	976.36	28	x	40.88
28	x	44	38	36.513	22	16.09	120.01	1064.33	28	x	44.02
28	x	47	40	37.885	22	16.93	126.29	1152.29	28	x	47.16
28	x	50	42	39.189	20	20.94	132.57	1240.26	28	x	50.30
28	x	53	44	40.433	20	21.94	138.86	1328.22	28	x	53.45
28	x	56	46	41.623	20	22.93	145.14	1416.19	28	x	56.59
28	x	59	48	42.765	20	23.93	151.42	1504.15	28	x	59.73
28	x	63	50	43.864	20	24.93	157.71	1592.12	28	x	62.87
28	x	66	52	44.922	20	25.93	163.99	1680.08	28	x	66.01
28	x	69	54	45.944	20	26.92	170.27	1768.05	28	x	69.15
28	x	72	56	46.933	18	36.35	176.55	1856.01	28	x	72.29
28	x	75	58	47.890	18	37.65	182.84	1943.98	28	x	75.44
28	x	78	60	48.819	18	38.95	189.12	2031.94	28	x	78.58
28	x	81	62	49.722	18	40.24	195.40	2119.91	28	x	81.72
28	x	85	64	50.599	18	41.54	201.69	2207.87	28	x	84.86
28	x	88	66	51.454	18	42.84	207.97	2295.83	28	x	88.00
28	x	91	68	52.287	18	44.14	214.25	2383.80	28	x	91.14
28	x	94	70	53.100	18	45.44	220.54	2471.76	28	x	94.29
28	x	97	72	53.893	18	46.74	226.82	2559.73	28	x	97.43
28	x	100	74	54.668	18	48.03	233.10	2647.69	28	x	100.57
28	x	103	76	55.427	18	49.33	239.39	2735.66	28	x	103.71
28	x	107	78	56.169	18	50.63	245.67	2823.62	28	x	106.85
28	x	110	80	56.896	18	51.93	251.95	2911.59	28	x	109.99
28	x	113	82	57.609	18	53.23	258.24	2999.55	28	x	113.14
28	x	116	84	58.307	18	54.52	264.52	3087.52	28	x	116.28
28	x	119	86	58.993	18	55.82	270.80	3175.48	28	x	119.42
28	x	122	88	59.666	18	57.12	277.09	3263.45	28	x	122.56
28	x	125	90	60.327	18	58.42	283.37	3351.41	28	x	125.70
28	x	129	92	60.976	18	59.72	289.65	3439.38	28	x	128.84
30	x	33	32	32.140	22	13.55	101.16	810.48	30	x	33.45
30	x	36	34	33.913	22	14.39	107.44	904.73	30	x	36.60
30	x	39	36	35.571	22	15.24	113.72	998.98	30	x	39.74
30	x	43	38	37.130	22	16.09	120.01	1093.23	30	x	42.88
30	x	46	40	38.604	22	16.93	126.29	1187.48	30	x	46.02
30	x	49	42	40.003	20	20.94	132.57	1281.72	30	x	49.16
30	x	52	44	41.335	20	21.94	138.86	1375.97	30	x	52.30
30	x	55	46	42.609	20	22.93	145.14	1470.22	30	x	55.45
30	x	58	48	43.829	20	23.93	151.42	1564.47	30	x	58.59
30	x	61	50	45.002	20	24.93	157.71	1658.72	30	x	61.73
30	x	65	52	46.130	20	25.93	163.99	1752.96	30	x	64.87
30	x	68	54	47.219	20	26.92	170.27	1847.21	30	x	68.01

Flat Oval Size			Basic Round	Equivalent Round	Std. Gauge	Weight (per lin.ft.)	Surface Area/Perimeter (in.)	Cross Sectional Area (in <sup>2</sup> )	Actual Size		
ma	x	MA							ma	x	MA
30	x	71	56	48.272	18	36.35	176.55	1941.46	30	x	71.15
30	x	74	58	49.290	18	37.65	182.84	2035.71	30	x	74.29
30	x	77	60	50.278	18	38.95	189.12	2129.96	30	x	77.44
30	x	80	62	51.237	18	40.24	195.40	2224.20	30	x	80.58
30	x	83	64	52.169	18	41.54	201.69	2318.45	30	x	83.72
30	x	87	66	53.076	18	42.84	207.97	2412.70	30	x	86.86
30	x	90	68	53.959	18	44.14	214.25	2506.95	30	x	90.00
30	x	93	70	54.821	18	45.44	220.54	2601.20	30	x	93.14
30	x	96	72	55.662	18	46.74	226.82	2695.44	30	x	96.29
30	x	99	74	56.483	18	48.03	233.10	2789.69	30	x	99.43
30	x	102	76	57.286	18	49.33	239.39	2883.94	30	x	102.57
30	x	105	78	58.072	18	50.63	245.67	2978.19	30	x	105.71
30	x	109	80	58.841	18	51.93	251.95	3072.44	30	x	108.85
30	x	112	82	59.594	18	53.23	258.24	3166.68	30	x	111.99
30	x	115	84	60.333	18	54.52	264.52	3260.93	30	x	115.14
30	x	118	86	61.058	18	55.82	270.80	3355.18	30	x	118.28
30	x	121	88	61.769	18	57.12	277.09	3449.43	30	x	121.42
30	x	124	90	62.467	18	58.42	283.37	3543.68	30	x	124.56
30	x	127	92	63.153	18	59.72	289.65	3637.92	30	x	127.70
32	x	35	34	34.148	22	14.39	107.44	914.78	32	x	35.45
32	x	38	36	35.933	22	15.24	113.72	1015.31	32	x	38.60
32	x	41	38	37.608	22	16.09	120.01	1115.84	32	x	41.74
32	x	45	40	39.188	22	16.93	126.29	1216.37	32	x	44.88
32	x	48	42	40.686	22	17.78	132.57	1316.91	32	x	48.02
32	x	51	44	42.110	20	21.94	138.86	1417.44	32	x	51.16
32	x	54	46	43.469	20	22.93	145.14	1517.97	32	x	54.30
32	x	57	48	44.769	20	23.93	151.42	1618.50	32	x	57.45
32	x	60	50	46.017	20	24.93	157.71	1719.03	32	x	60.59
32	x	63	52	47.218	20	25.93	163.99	1819.56	32	x	63.73
32	x	67	54	48.375	20	26.92	170.27	1920.09	32	x	66.87
32	x	70	56	49.493	20	27.92	176.55	2020.62	32	x	70.01
32	x	73	58	50.573	18	37.65	182.84	2121.16	32	x	73.15
32	x	76	60	51.621	18	38.95	189.12	2221.69	32	x	76.29
32	x	79	62	52.637	18	40.24	195.40	2322.22	32	x	79.44
32	x	82	64	53.623	18	41.54	201.69	2422.75	32	x	82.58
32	x	85	66	54.583	18	42.84	207.97	2523.28	32	x	85.72
32	x	89	68	55.518	18	44.14	214.25	2623.81	32	x	88.86
32	x	92	70	56.429	18	45.44	220.54	2724.34	32	x	92.00
32	x	95	72	57.317	18	46.74	226.82	2824.87	32	x	95.14
32	x	98	74	58.185	18	48.03	233.10	2925.40	32	x	98.29
32	x	101	76	59.033	18	49.33	239.39	3025.94	32	x	101.43
32	x	104	78	59.862	18	50.63	245.67	3126.47	32	x	104.57
32	x	107	80	60.674	18	51.93	251.95	3227.00	32	x	107.71
32	x	111	82	61.469	18	53.23	258.24	3327.53	32	x	110.85
32	x	114	84	62.248	18	54.52	264.52	3428.06	32	x	113.99
32	x	117	86	63.011	18	55.82	270.80	3528.59	32	x	117.14
32	x	120	88	63.761	18	57.12	277.09	3629.12	32	x	120.28
32	x	123	90	64.497	18	58.42	283.37	3729.65	32	x	123.42
32	x	126	92	65.219	18	59.72	289.65	3830.19	32	x	126.56
34	x	37	36	36.155	22	15.24	113.72	1025.36	34	x	37.45
34	x	40	38	37.951	22	16.09	120.01	1132.18	34	x	40.60
34	x	43	40	39.642	22	16.93	126.29	1238.99	34	x	43.74
34	x	47	42	41.241	22	17.78	132.57	1345.81	34	x	46.88
34	x	50	44	42.760	20	21.94	138.86	1452.62	34	x	50.02
34	x	53	46	44.207	20	22.93	145.14	1559.43	34	x	53.16

Flat Oval Size			Basic Round	Equivalent Round	Std. Gauge	Weight (per lin.ft.)	Surface Area/Perimeter (in.)	Cross Sectional Area (in <sup>2</sup> )	Actual Size		
ma	x	MA							ma	x	MA
34	x	56	48	45.590	20	23.93	151.42	1666.25	34	x	56.30
34	x	59	50	46.916	20	24.93	157.71	1773.06	34	x	59.45
34	x	62	52	48.190	20	25.93	163.99	1879.88	34	x	62.59
34	x	65	54	49.417	20	26.92	170.27	1986.69	34	x	65.73
34	x	69	56	50.601	20	27.92	176.55	2093.51	34	x	68.87
34	x	72	58	51.745	18	37.65	182.84	2200.32	34	x	72.01
34	x	75	60	52.853	18	38.95	189.12	2307.13	34	x	75.15
34	x	78	62	53.927	18	40.24	195.40	2413.95	34	x	78.29
34	x	81	64	54.969	18	41.54	201.69	2520.76	34	x	81.44
34	x	84	66	55.983	18	42.84	207.97	2627.58	34	x	84.58
34	x	87	68	56.969	18	44.14	214.25	2734.39	34	x	87.72
34	x	91	70	57.930	18	45.44	220.54	2841.21	34	x	90.86
34	x	94	72	58.866	18	46.74	226.82	2948.02	34	x	94.00
34	x	97	74	59.781	18	48.03	233.10	3054.84	34	x	97.14
34	x	100	76	60.674	18	49.33	239.39	3161.65	34	x	100.29
34	x	103	78	61.547	18	50.63	245.67	3268.46	34	x	103.43
34	x	106	80	62.402	18	51.93	251.95	3375.28	34	x	106.57
34	x	109	82	63.238	18	53.23	258.24	3482.09	34	x	109.71
34	x	113	84	64.057	18	54.52	264.52	3588.91	34	x	112.85
34	x	116	86	64.861	18	55.82	270.80	3695.72	34	x	115.99
34	x	119	88	65.648	18	57.12	277.09	3802.54	34	x	119.14
34	x	122	90	66.422	18	58.42	283.37	3909.35	34	x	122.28
34	x	125	92	67.181	18	59.72	289.65	4016.17	34	x	125.42
36	x	39	38	38.162	22	16.09	120.01	1142.23	36	x	39.45
36	x	42	40	39.968	22	16.93	126.29	1255.32	36	x	42.60
36	x	45	42	41.673	22	17.78	132.57	1368.42	36	x	45.74
36	x	49	44	43.290	20	21.94	138.86	1481.52	36	x	48.88
36	x	52	46	44.828	20	22.93	145.14	1594.62	36	x	52.02
36	x	55	48	46.296	20	23.93	151.42	1707.71	36	x	55.16
36	x	58	50	47.702	20	24.93	157.71	1820.81	36	x	58.30
36	x	61	52	49.051	20	25.93	163.99	1933.91	36	x	61.45
36	x	64	54	50.350	20	26.92	170.27	2047.01	36	x	64.59
36	x	67	56	51.601	20	27.92	176.55	2160.10	36	x	67.73
36	x	71	58	52.810	18	37.65	182.84	2273.20	36	x	70.87
36	x	74	60	53.979	18	38.95	189.12	2386.30	36	x	74.01
36	x	77	62	55.112	18	40.24	195.40	2499.40	36	x	77.15
36	x	80	64	56.211	18	41.54	201.69	2612.49	36	x	80.29
36	x	83	66	57.279	18	42.84	207.97	2725.59	36	x	83.44
36	x	86	68	58.317	18	44.14	214.25	2838.69	36	x	86.58
36	x	89	70	59.329	18	45.44	220.54	2951.79	36	x	89.72
36	x	93	72	60.314	18	46.74	226.82	3064.89	36	x	92.86
36	x	96	74	61.276	18	48.03	233.10	3177.98	36	x	96.00
36	x	99	76	62.215	18	49.33	239.39	3291.08	36	x	99.14
36	x	102	78	63.132	18	50.63	245.67	3404.18	36	x	102.29
36	x	105	80	64.030	18	51.93	251.95	3517.28	36	x	105.43
36	x	108	82	64.908	18	53.23	258.24	3630.37	36	x	108.57
36	x	111	84	65.768	18	54.52	264.52	3743.47	36	x	111.71
36	x	115	86	66.611	18	55.82	270.80	3856.57	36	x	114.85
36	x	118	88	67.437	18	57.12	277.09	3969.67	36	x	117.99
36	x	121	90	68.248	18	58.42	283.37	4082.76	36	x	121.14
36	x	124	92	69.044	18	59.72	289.65	4195.86	36	x	124.28