

Number of circles n	Radius	Radius ratio	Density (shaded: new record)	Area of circle required to cover n circles of area 1
Data from Erich Specht				
1	0.564189584	1	1	1
2	0.282094792	2	0.5	4
3	0.261841297	2.154700538	0.646170928	4.64273441
4	0.233694977	2.414213562	0.686291501	5.828427125
5	0.208858418	2.701301617	0.685210244	7.297030424
6	0.188063195	3	0.666666667	9
7	0.188063195	3	0.777777778	9
8	0.170720038	3.304764871	0.732502069	10.92147085
9	0.156149992	3.61312593	0.68940799	13.05467898
10	0.147963753	3.813025631	0.687797433	14.53916447
11	0.143786368	3.9238044	0.714460109	15.39624097
12	0.140011245	4.02960193	0.739021298	16.23769172
13	0.133187094	4.236067978	0.72446517	17.94427191
14	0.13034513	4.328428555	0.747252762	18.73529375
15	0.124783243	4.521356965	0.733759381	20.4426688
16	0.122239991	4.615425595	0.751097773	21.30215342
17	0.117734894	4.792033748	0.740302448	22.96358745
18	0.116	4.863703305	0.760918874	23.65560984
19	0.116	4.863703305	0.803192145	23.65560984
20	0.110143353	5.122320737	0.76224829	26.23816973
21	0.107417266	5.252317475	0.761232561	27.58683886
22	0.103716679	5.439718959	0.743480797	29.59054235
23	0.101743698	5.545204223	0.747984753	30.74928987
24	0.099827214	5.651661092	0.751378942	31.9412731
25	0.098071756	5.752824331	0.755401397	33.09498778
26	0.096803791	5.828176537	0.765434356	33.96764175
27	0.095521771	5.906397847	0.77395974	34.88553553
28	0.09379807	6.014938097	0.773919353	36.17948032
29	0.091908542	6.138597904	0.769590369	37.68238423
30	0.091031487	6.197741071	0.78100605	38.41199438
31	0.089674855	6.291502622	0.783164386	39.58300524
32	0.087750654	6.429462971	0.77410626	41.3379941
33	0.086976323	6.486703124	0.784270529	42.07731741
34	0.085341589	6.61095709	0.777947412	43.70475365
35	0.08424297	6.697171092	0.780342492	44.85210063
36	0.083623858	6.746753793	0.790883977	45.51868675
37	0.08347518	6.758770483	0.809965138	45.68097844
38	0.081039751	6.961886965	0.784024549	48.46787012
39	0.079937496	7.057884163	0.782916696	49.81372885
40	0.079197325	7.123846436	0.78818995	50.74918804
41	0.077711932	7.260012329	0.777873793	52.70777901
42	0.076793959	7.346796407	0.778132009	53.97541745
43	0.076036897	7.419944856	0.781028893	55.05558167
44	0.075244975	7.498036683	0.782631916	56.2205541
45	0.074501006	7.572912326	0.78466929	57.3490011
46	0.073748538	7.650179915	0.7859855	58.52525273
47	0.073042098	7.724170053	0.787760508	59.662803

48	0.072413032	7.791271431	0.790723359	60.7039105
49	0.071535288	7.886870959	0.787746731	62.20273352
50	0.070989431	7.947515275	0.791602691	63.16299904
51	0.070282042	8.027506952	0.791423233	64.44086787
52	0.069784702	8.084717191	0.795561354	65.36265205
53	0.06897534	8.179583885	0.792160984	66.90559252
54	0.068770209	8.203982383	0.80231391	67.30532695
55	0.068710576	8.211102551	0.815754986	67.4222051
56	0.067297378	8.383529923	0.796772231	70.28357396
57	0.066790251	8.447184653	0.798823587	71.35492857
58	0.066184061	8.52455377	0.798150306	72.66801698
59	0.065660702	8.592499959	0.799121719	73.83105555
60	0.065252746	8.646219845	0.802599163	74.75711762
61	0.065139152	8.661297576	0.81313736	75.01807569
62	0.063896328	8.829765409	0.795231105	77.96475718
63	0.063446613	8.892351538	0.796722906	79.07391587
64	0.062953738	8.961971109	0.796843244	80.31692615
65	0.062566788	9.017397323	0.799375705	81.31345448
66	0.06202158	9.096665837	0.797589546	82.74932935
67	0.061531489	9.169119588	0.796928812	84.07275403
68	0.06112713	9.229773747	0.798227715	85.18872342
69	0.060863443	9.269761267	0.80299343	85.92847394
70	0.060362698	9.346659533	0.801281644	87.36004443
71	0.059916866	9.416206539	0.800767423	88.66494558
72	0.059552046	9.473890857	0.802187226	89.75460796
73	0.059067432	9.551618559	0.800145411	91.23341709
74	0.058835654	9.589246443	0.804753288	91.95364734
75	0.05829402	9.67834403	0.800680316	93.67034317
76	0.057986944	9.729596802	0.802830578	94.66505393
77	0.057564047	9.801075688	0.801573294	96.06108463
78	0.057222574	9.859563121	0.802378456	97.21098493
79	0.05693359	9.909608377	0.804477881	98.20033819
80	0.05658539	9.970587478	0.804726848	99.41261466
81	0.056352895	10.01172317	0.808104181	100.2346009
82	0.056116823	10.0538405	0.81124096	101.0797087
83	0.055764768	10.11731251	0.810863521	102.3600123
84	0.055574839	10.15188881	0.815052495	103.0608465
85	0.05551347	10.16311147	0.822935028	103.2888347
86	0.054782595	10.29870131	0.81083694	106.0632487
87	0.05444159	10.36320916	0.810085251	107.3961041
88	0.054079164	10.43266092	0.808523202	108.8404139
89	0.053729129	10.50062767	0.807159732	110.2631815
90	0.053497618	10.54606918	0.809210069	111.2195751
91	0.053392803	10.56677223	0.814998294	111.6566754
92	0.052803553	10.68468976	0.805868155	114.1625952
93	0.052544386	10.7373904	0.806650599	115.2915527
94	0.052346252	10.77803216	0.809187011	116.1659773
95	0.052046025	10.84020502	0.808441526	117.5100449
96	0.051838175	10.88366989	0.810439334	118.4542704
97	0.051576828	10.93881895	0.810645293	119.6577601
98	0.051386273	10.97938313	0.812961905	120.5468539
99	0.051117106	11.03719739	0.812676264	121.8197262
100	0.050908026	11.08252729	0.814183658	122.8224112
101	0.050612674	11.14719966	0.812811451	124.2600603
102	0.0503781	11.19910404	0.813267867	125.4199312
103	0.050043297	11.27402901	0.81036174	127.1037302

104	0.049827615	11.32282942	0.811191534	128.2064662
105	0.049652951	11.36265965	0.813259795	129.1100343
106	0.049386974	11.42385399	0.812232903	130.5044399
107	0.049102068	11.49013895	0.810463044	132.0232931
108	0.048910741	11.53508557	0.811674896	133.0581991
109	0.048796382	11.56211907	0.815364169	133.6825974
110	0.048552451	11.62020805	0.814638399	135.0292352
111	0.048374953	11.66284502	0.81604474	136.0219539
112	0.048159694	11.71497454	0.816084867	137.2406285
113	0.047952642	11.7655579	0.81630676	138.4283527
114	0.047743622	11.81706717	0.816367003	139.6430766
115	0.047653264	11.83947401	0.820413926	140.1731448
116	0.047412701	11.89954535	0.819213786	141.5991796
117	0.04722548	11.94672004	0.819763332	142.7241197
118	0.047071671	11.98575631	0.821393233	143.6583543
119	0.046843791	12.04406329	0.82035325	145.0594606
120	0.046619608	12.10198033	0.81934793	146.4579278
121	0.046531855	12.12480308	0.823068503	147.0108498
122	0.046228471	12.20437481	0.819084593	148.9467645
123	0.045951261	12.27799996	0.815924279	150.749283
124	0.045760367	12.32921894	0.815737741	152.0096396
125	0.045614051	12.36876727	0.817066072	152.9864037
126	0.045386341	12.43082336	0.815400089	154.5253695
127	0.045230283	12.47371325	0.816229354	155.5935221
128	0.045065417	12.51934689	0.81667004	156.7340465
129	0.044899798	12.56552618	0.817011843	157.8924481
130	0.044713108	12.61799088	0.816512681	159.2136938
131	0.044590579	12.65266318	0.818290297	160.0898856
132	0.044402937	12.70613211	0.81761189	161.4457931
133	0.044301131	12.73533131	0.820032653	162.1886635
134	0.044155106	12.77744829	0.820760665	163.2631847
135	0.043971899	12.83068511	0.820038184	164.6264804
136	0.043812084	12.87748787	0.820118502	165.8296938
137	0.043661221	12.92198361	0.820469035	166.9776605
138	0.043467627	12.97953484	0.819145084	168.4683246
139	0.043359007	13.01205025	0.820962532	169.3134517
140	0.043193515	13.06190485	0.820568807	170.6133584
141	0.043009111	13.11790837	0.819388617	172.0795201
142	0.042855017	13.16507653	0.819297385	173.3192399
143	0.042730734	13.20336741	0.820288495	174.328911
144	0.04255811	13.25692294	0.819364282	175.746006
145	0.042468692	13.28483545	0.821590944	176.4868529
146	0.042315434	13.33295044	0.821297169	177.7675675
147	0.042215787	13.36442193	0.823032487	178.6077735
148	0.042141383	13.3880179	0.825713046	179.2390234
149	0.041992293	13.43555077	0.825420631	180.5140245
150	0.04191233	13.46118404	0.827798691	181.2034756
151	0.041865032	13.47639219	0.831437608	181.6131464