

## Table Construction Time of the Step Pyramid

by Rudolf Volz

Up No.	The Up Number represents the specific level of the total pyramid counted from the bottom to the top (1 - 210).
Down No.	The Down Number represents the specific level of the step pyramid counted backwards from the bottom to the top (209 - 1). Up_No. = 210 – Down_No.
Blocks	Number of blocks of the corresponding level of the step pyramid. This is equal to the square of the Down No. Blocks = (Down No.) <sup>2</sup>
Accum. blocks	Accumulated blocks up to the corresponding level.
Volume %	Percentage of blocks up to the corresponding level with respect to the total step pyramid. It is determined by the accumulated blocks divided by the total number of blocks in the step pyramid. V% = 100 * Accumulated_blocks / 3,065,985
Max. rate	The maximal rate represents the number of produced and installed blocks per day for 3 months during the Nile flood. There were about 20,000 workers available during this time.
Min. rate	The minimal rate represents the number of installed blocks per day during the other 9 months of the year. There were about 10,000 workers available during this time.
Average rate	Average of the installation rate over the year. A = (3 Maximal_rate + 9 Minimal_rate) / 12
Constr. days	Construction days needed for the corresponding level of the step pyramid without casing. This is equal to the number of blocks divided by the average rate. C1 = Blocks / Average_rate
Accum. days	Accumulated construction days up to the corresponding level.
Constr. years	The construction years are the accumulated years up to the corresponding level. Each year consisted of 300 working days. The rest were Saint days. C2 = Accumulated_days / 300

Up No.	Down No.	Blocks	Accum. blocks	Volume %	Max. rate	Min. rate	Average rate	Constr. days	Accum. days	Constr. years
1	209	43,681	43,681	1.43	1,422	711	889	49.1	49.1	0.16
2	208	43,264	86,945	2.84	1,413	707	883	49.0	98.1	0.33
3	207	42,849	129,794	4.23	1,397	698	873	49.1	147.2	0.49
4	206	42,436	172,230	5.62	1,382	691	864	49.1	196.3	0.65
5	205	42,025	214,255	6.99	1,368	684	855	49.2	245.5	0.82
6	204	41,616	255,871	8.35	1,354	677	846	49.2	294.7	0.98
7	203	41,209	297,080	9.69	1,336	668	835	49.4	344.0	1.15
8	202	40,804	337,884	11.02	1,316	658	822	49.6	393.7	1.31
9	201	40,401	378,285	12.34	1,300	650	812	49.7	443.4	1.48
10	200	40,000	418,285	13.65	1,285	643	803	49.8	493.2	1.64

Table Construction Time of the Step Pyramid /2

Up No.	Down No.	Blocks	Accum. blocks	Volume %	Max. rate	Min. rate	Average rate	Constr. days	Accum. days	Constr. years
11	199	39,601	457,886	14.94	1,273	636	795	49.8	543.0	1.81
12	198	39,204	497,090	16.22	1,260	630	788	49.8	592.8	1.98
13	197	38,809	535,899	17.48	1,249	625	781	49.7	642.5	2.14
14	196	38,416	574,315	18.74	1,238	619	774	49.6	692.1	2.31
15	195	38,025	612,340	19.98	1,224	612	765	49.7	741.8	2.47
16	194	37,636	649,976	21.21	1,210	605	756	49.8	791.6	2.64
17	193	37,249	687,225	22.42	1,199	599	749	49.7	841.3	2.80
18	192	36,864	724,089	23.62	1,186	593	741	49.7	891.0	2.97
19	191	36,481	760,570	24.81	1,175	588	735	49.7	940.7	3.14
20	190	36,100	796,670	25.99	1,165	582	728	49.6	990.3	3.30
21	189	35,721	832,391	27.16	1,152	576	720	49.6	1,039.9	3.47
22	188	35,344	867,735	28.31	1,143	572	714	49.5	1,089.4	3.63
23	187	34,969	902,704	29.45	1,132	566	708	49.4	1,138.8	3.80
24	186	34,596	937,300	30.58	1,125	563	703	49.2	1,188.0	3.96
25	185	34,225	971,525	31.70	1,114	557	696	49.1	1,237.2	4.12
26	184	33,856	1,005,381	32.80	1,103	552	690	49.1	1,286.2	4.29
27	183	33,489	1,038,870	33.89	1,094	547	684	49.0	1,335.2	4.45
28	182	33,124	1,071,994	34.98	1,085	543	678	48.8	1,384.0	4.61
29	181	32,761	1,104,755	36.04	1,073	536	671	48.9	1,432.9	4.78
30	180	32,400	1,137,155	37.10	1,064	532	665	48.7	1,481.6	4.94
31	179	32,041	1,169,196	38.15	1,055	527	659	48.6	1,530.2	5.10
32	178	31,684	1,200,880	39.18	1,046	523	654	48.5	1,578.7	5.26
33	177	31,329	1,232,209	40.20	1,037	518	648	48.3	1,627.1	5.42
34	176	30,976	1,263,185	41.21	1,028	514	642	48.2	1,675.3	5.58
35	175	30,625	1,293,810	42.21	1,019	509	637	48.1	1,723.4	5.74
36	174	30,276	1,324,086	43.20	1,012	506	632	47.9	1,771.3	5.90
37	173	29,929	1,354,015	44.18	1,003	501	627	47.8	1,819.0	6.06
38	172	29,584	1,383,599	45.14	994	497	621	47.6	1,866.7	6.22
39	171	29,241	1,412,840	46.10	986	493	617	47.4	1,914.1	6.38
40	170	28,900	1,441,740	47.04	979	490	612	47.2	1,961.3	6.54
41	169	28,561	1,470,301	47.97	972	486	608	47.0	2,008.3	6.69
42	168	28,224	1,498,525	48.89	963	482	602	46.9	2,055.2	6.85
43	(50%)	27,889	1,526,414	49.80	956	478	597	46.7	2,101.9	7.01
44	166	27,556	1,553,970	50.70	950	475	594	46.4	2,148.3	7.16
45	165	27,225	1,581,195	51.59	943	472	590	46.2	2,194.5	7.31
46	164	26,896	1,608,091	52.47	936	468	585	46.0	2,240.5	7.47
47	163	26,569	1,634,660	53.33	929	464	581	45.8	2,286.2	7.62
48	162	26,244	1,660,904	54.19	922	461	576	45.6	2,331.8	7.77
49	161	25,921	1,686,825	55.04	900	450	563	46.1	2,377.9	7.93
50	160	25,600	1,712,425	55.87	900	450	563	45.5	2,423.4	8.08
51	159	25,281	1,737,706	56.70	900	450	563	44.9	2,468.3	8.23
52	158	24,964	1,762,670	57.51	893	446	558	44.7	2,513.1	8.38
53	157	24,649	1,787,319	58.31	889	445	556	44.4	2,557.4	8.52
54	156	24,336	1,811,655	59.11	882	441	551	44.1	2,601.6	8.67
55	155	24,025	1,835,680	59.89	875	437	547	43.9	2,645.5	8.82
56	154	23,716	1,859,396	60.67	868	434	542	43.7	2,689.2	8.96
57	153	23,409	1,882,805	61.43	862	431	539	43.4	2,732.7	9.11
58	152	23,104	1,905,909	62.18	857	428	536	43.1	2,775.8	9.25
59	151	22,801	1,928,710	62.93	851	426	532	42.8	2,818.7	9.40
60	150	22,500	1,951,210	63.66	844	422	528	42.6	2,861.3	9.54

Table Construction Time of the Step Pyramid /3

Up No.	Down No.	Blocks	Accum. blocks	Volume %	Max. rate	Min. rate	Average rate	Constr. days	Accum. days	Constr. years
61	149	22,201	1,973,411	64.39	839	419	524	42.3	2,903.7	9.68
62	148	21,904	1,995,315	65.10	833	417	521	42.1	2,945.7	9.82
63	147	21,609	2,016,924	65.81	828	414	518	41.8	2,987.5	9.96
64	(10 yrs)	21,316	2,038,240	66.50	821	410	513	41.6	3,029.0	10.10
65	145	21,025	2,059,265	67.19	815	408	510	41.3	3,070.3	10.23
66	144	20,736	2,080,001	67.86	810	405	506	41.0	3,111.2	10.37
67	143	20,449	2,100,450	68.53	805	402	503	40.7	3,151.9	10.51
68	142	20,164	2,120,614	69.19	799	400	500	40.4	3,192.3	10.64
69	141	19,881	2,140,495	69.84	794	397	496	40.1	3,232.3	10.77
70	140	19,600	2,160,095	70.48	790	395	494	39.7	3,272.0	10.91
71	139	19,321	2,179,416	71.11	787	393	492	39.3	3,311.3	11.04
72	138	19,044	2,198,460	71.73	781	391	488	39.0	3,350.3	11.17
73	137	18,769	2,217,229	72.34	776	388	485	38.7	3,389.0	11.30
74	136	18,496	2,235,725	72.94	772	386	483	38.3	3,427.4	11.42
75	135	18,225	2,253,950	73.54	767	383	479	38.0	3,465.4	11.55
76	134	17,956	2,271,906	74.12	761	381	476	37.7	3,503.1	11.68
77	133	17,689	2,289,595	74.70	756	378	473	37.4	3,540.6	11.80
78	132	17,424	2,307,019	75.27	751	375	469	37.1	3,577.7	11.93
79	131	17,161	2,324,180	75.83	747	374	467	36.8	3,614.5	12.05
80	130	16,900	2,341,080	76.38	743	372	465	36.4	3,650.8	12.17
81	129	16,641	2,357,721	76.92	738	369	461	36.1	3,686.9	12.29
82	128	16,384	2,374,105	77.46	733	366	458	35.8	3,722.7	12.41
83	127	16,129	2,390,234	77.99	727	350	444	36.3	3,759.0	12.53
84	126	15,876	2,406,110	78.50	724	350	443	35.8	3,794.8	12.65
85	125	15,625	2,421,735	79.01	722	350	443	35.3	3,830.1	12.77
86	124	15,376	2,437,111	79.51	716	348	440	34.9	3,865.0	12.88
87	123	15,129	2,452,240	80.01	711	346	437	34.6	3,899.6	13.00
88	122	14,884	2,467,124	80.49	707	345	436	34.2	3,933.8	13.11
89	121	14,641	2,481,765	80.97	704	344	434	33.7	3,967.5	13.23
90	120	14,400	2,496,165	81.44	700	342	432	33.4	4,000.9	13.34
91	119	14,161	2,510,326	81.90	697	342	431	32.9	4,033.8	13.45
92	118	13,924	2,524,250	82.36	693	340	428	32.5	4,066.3	13.55
93	117	13,689	2,537,939	82.80	689	339	427	32.1	4,098.4	13.66
94	116	13,456	2,551,395	83.24	686	337	424	31.7	4,130.1	13.77
95	115	13,225	2,564,620	83.67	680	336	422	31.3	4,161.4	13.87
96	114	12,996	2,577,616	84.10	677	334	420	31.0	4,192.4	13.97
97	113	12,769	2,590,385	84.52	673	332	417	30.6	4,223.0	14.08
98	112	12,544	2,602,929	84.92	670	331	416	30.2	4,253.2	14.18
99	111	12,321	2,615,250	85.33	666	330	414	29.8	4,282.9	14.28
100	110	12,100	2,627,350	85.72	662	327	411	29.5	4,312.4	14.37
101	109	11,881	2,639,231	86.11	659	326	409	29.0	4,341.4	14.47
102	108	11,664	2,650,895	86.49	657	324	407	28.6	4,370.1	14.57
103	107	11,449	2,662,344	86.86	653	322	405	28.3	4,398.3	14.66
104	106	11,236	2,673,580	87.23	650	320	402	27.9	4,426.3	14.75
105	(Median)	11,025	2,684,605	87.59	646	318	400	27.6	4,453.8	14.85
106	104	10,816	2,695,421	87.94	643	316	398	27.2	4,481.0	14.94
107	103	10,609	2,706,030	88.29	639	314	395	26.8	4,507.9	15.03
108	102	10,404	2,716,434	88.63	635	312	393	26.5	4,534.3	15.11
109	101	10,201	2,726,635	88.96	632	311	391	26.1	4,560.4	15.20
110	100	10,000	2,736,635	89.29	628	311	390	25.6	4,586.0	15.29

Table Construction Time of the Step Pyramid /4

Up No.	Down No.	Blocks	Accum. blocks	Volume %	Max. rate	Min. rate	Average rate	Constr. days	Accum. days	Constr. years
111	99	9,801	2,746,436	89.61	625	310	389	25.2	4,611.3	15.37
112	(90%)	9,604	2,756,040	89.92	621	310	388	24.8	4,636.0	15.45
113	97	9,409	2,765,449	90.23	617	306	384	24.5	4,660.5	15.54
114	96	9,216	2,774,665	90.53	616	304	382	24.1	4,684.7	15.62
115	95	9,025	2,783,690	90.82	612	303	380	23.7	4,708.4	15.69
116	94	8,836	2,792,526	91.11	540	290	353	25.1	4,733.5	15.78
117	93	8,649	2,801,175	91.39	540	290	353	24.5	4,758.0	15.86
118	92	8,464	2,809,639	91.67	540	289	352	24.1	4,782.1	15.94
119	91	8,281	2,817,920	91.94	540	289	352	23.5	4,805.6	16.02
120	90	8,100	2,826,020	92.20	540	289	352	23.0	4,828.6	16.10
121	89	7,921	2,833,941	92.46	540	287	350	22.6	4,851.3	16.17
122	88	7,744	2,841,685	92.71	540	286	350	22.2	4,873.4	16.24
123	87	7,569	2,849,254	92.96	540	285	349	21.7	4,895.1	16.32
124	86	7,396	2,856,650	93.20	540	283	347	21.3	4,916.4	16.39
125	85	7,225	2,863,875	93.44	540	282	347	20.9	4,937.3	16.46
126	84	7,056	2,870,931	93.67	540	281	346	20.4	4,957.7	16.53
127	83	6,889	2,877,820	93.89	396	276	306	22.5	4,980.2	16.60
128	82	6,724	2,884,544	94.11	394	276	306	22.0	5,002.2	16.67
129	81	6,561	2,891,105	94.33	392	276	305	21.5	5,023.7	16.75
130	80	6,400	2,897,505	94.54	391	276	305	21.0	5,044.7	16.82
131	79	6,241	2,903,746	94.74	389	276	304	20.5	5,065.2	16.88
132	78	6,084	2,909,830	94.94	387	275	303	20.1	5,085.3	16.95
133	77	5,929	2,915,759	95.13	385	274	302	19.6	5,104.9	17.02
134	76	5,776	2,921,535	95.32	383	273	301	19.2	5,124.2	17.08
135	75	5,625	2,927,160	95.50	382	272	299	18.8	5,143.0	17.14
136	74	5,476	2,932,636	95.68	380	271	298	18.4	5,161.3	17.20
137	73	5,329	2,937,965	95.86	378	270	297	17.9	5,179.3	17.26
138	72	5,184	2,943,149	96.02	380	269	297	17.5	5,196.7	17.32
139	71	5,041	2,948,190	96.19	376	268	295	17.1	5,213.8	17.38
140	70	4,900	2,953,090	96.35	374	267	294	16.7	5,230.5	17.43
141	69	4,761	2,957,851	96.50	373	266	293	16.3	5,246.8	17.49
142	68	4,624	2,962,475	96.66	371	265	291	15.9	5,262.6	17.54
143	67	4,489	2,966,964	96.80	369	265	291	15.4	5,278.0	17.59
144	66	4,356	2,971,320	96.94	367	264	290	15.0	5,293.1	17.64
145	65	4,225	2,975,545	97.08	365	263	289	14.6	5,307.7	17.69
146	64	4,096	2,979,641	97.22	364	262	287	14.3	5,322.0	17.74
147	63	3,969	2,983,610	97.35	362	262	287	13.8	5,335.8	17.79
148	62	3,844	2,987,454	97.47	360	261	286	13.5	5,349.3	17.83
149	61	3,721	2,991,175	97.59	358	260	285	13.1	5,362.3	17.87
150	60	3,600	2,994,775	97.71	356	259	283	12.7	5,375.0	17.92
151	59	3,481	2,998,256	97.82	355	258	282	12.3	5,387.4	17.96
152	58	3,364	3,001,620	97.93	353	257	281	12.0	5,399.3	18.00
153	57	3,249	3,004,869	98.04	351	257	281	11.6	5,410.9	18.04
154	56	3,136	3,008,005	98.14	349	256	279	11.2	5,422.2	18.07
155	55	3,025	3,011,030	98.24	347	256	279	10.8	5,433.0	18.11
156	54	2,916	3,013,946	98.33	346	256	278	10.5	5,443.5	18.14
157	53	2,809	3,016,755	98.43	344	256	278	10.1	5,453.6	18.18
158	52	2,704	3,019,459	98.51	342	255	277	9.8	5,463.4	18.21
159	51	2,601	3,022,060	98.60	340	254	276	9.4	5,472.8	18.24
160	50	2,500	3,024,560	98.68	338	252	274	9.1	5,481.9	18.27

