

表 6.8 學習曲線的單位值

舉例：第一個單位須 10 小時完成，學習率為 80%，第五個單位需時多久
答：從第五例，80%該行對應的值為 0.5956，即第五單位須花 $10 \times 0.5956 = 5.956$ 小時

first car 3.6 hours
fourth car 1.76 hours

$1.76/3.6=0.49$
check table 6.8
fourth row for 0.49
we can find 學習率
70%

單位	改良率							
	60%	65%	70%	75%	80%	85%	90%	95%
1	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
2	0.6000	0.6500	0.7000	0.7500	0.8000	0.8500	0.9000	0.9500
3	0.4450	0.5052	0.5682	0.6338	0.7021	0.7729	0.8462	0.9219
4	0.3600	0.4225	0.4900	0.5625	0.6400	0.7225	0.8100	0.9025
5	0.3054	0.3678	0.4368	0.5127	0.5956	0.6857	0.7830	0.8877
6	0.2670	0.3284	0.3977	0.4754	0.5617	0.6570	0.7616	0.8758
7	0.2383	0.2984	0.3674	0.4459	0.5345	0.6337	0.7439	0.8659
8	0.2160	0.2746	0.3430	0.4219	0.5120	0.6141	0.7290	0.8574
9	0.1980	0.2552	0.3228	0.4017	0.4930	0.5974	0.7161	0.8499
10	0.1832	0.2391	0.3058	0.3846	0.4765	0.5828	0.7047	0.8433
12	0.1602	0.2135	0.2784	0.3565	0.4493	0.5584	0.6854	0.8320
14	0.1430	0.1940	0.2572	0.3344	0.4276	0.5386	0.6696	0.8226
16	0.1296	0.1785	0.2401	0.3164	0.4096	0.5220	0.6561	0.8145
18	0.1188	0.1659	0.2260	0.3013	0.3944	0.5078	0.6445	0.8074
20	0.1099	0.1554	0.2141	0.2884	0.3812	0.4954	0.6342	0.8012
22	0.1025	0.1465	0.2038	0.2772	0.3697	0.4844	0.6251	0.7955
24	0.0961	0.1387	0.1949	0.2674	0.3595	0.4747	0.6169	0.7904
25	0.0933	0.1353	0.1908	0.2629	0.3548	0.4701	0.6131	0.7880
30	0.0815	0.1208	0.1737	0.2437	0.3346	0.4505	0.5963	0.7775
35	0.0728	0.1097	0.1605	0.2286	0.3184	0.4345	0.5825	0.7687
40	0.0660	0.1010	0.1498	0.2163	0.3050	0.4211	0.5708	0.7611
45	0.0605	0.0939	0.1410	0.2060	0.2936	0.4096	0.5607	0.7545
50	0.0560	0.0879	0.1336	0.1972	0.2838	0.3996	0.5518	0.7486
60	0.0489	0.0785	0.1216	0.1828	0.2676	0.3829	0.5367	0.7386
70	0.0437	0.0713	0.1123	0.1715	0.2547	0.3693	0.5243	0.7302
80	0.0396	0.0657	0.1049	0.1622	0.2440	0.3579	0.5137	0.7231
90	0.0363	0.0610	0.0987	0.1545	0.2349	0.3482	0.5046	0.7168
100	0.0336	0.0572	0.0935	0.1479	0.2271	0.3397	0.4966	0.7112
120	0.0294	0.0510	0.0851	0.1371	0.2141	0.3255	0.4830	0.7017
140	0.0262	0.0464	0.0786	0.1287	0.2038	0.3139	0.4718	0.6937
160	0.0237	0.0427	0.0734	0.1217	0.1952	0.3042	0.4623	0.6869
180	0.0218	0.0397	0.0691	0.1159	0.1879	0.2959	0.4541	0.6809
200	0.0201	0.0371	0.0655	0.1109	0.1816	0.2887	0.4469	0.6757
250	0.0171	0.0323	0.0584	0.1011	0.1691	0.2740	0.4320	0.6646
300	0.0149	0.0289	0.0531	0.0937	0.1594	0.2625	0.4202	0.6557
350	0.0133	0.0262	0.0491	0.0879	0.1517	0.2532	0.4105	0.6482
400	0.0121	0.0241	0.0458	0.0832	0.1453	0.2454	0.4022	0.6419
450	0.0111	0.0224	0.0431	0.0792	0.1399	0.2387	0.3951	0.6363
500	0.0103	0.0210	0.0408	0.0758	0.1352	0.2329	0.3888	0.6314

Source: Albert N. Schreiber, Richard A. Johnson, Robert C. Meier, William T. Newell, and Henry C. Fischer, *Cases in Manufacturing Management* (New York: McGraw-Hill, 1965), p. 464. Reprinted by permission of McGraw-Hill, ©1965.

表 6.9 學習曲線的累計值

舉例：第一個單位須 10 小時完成，學習率為 80%，生產前五單位時只須多少小時
答：從第五例，80%行的值可對應出 3.738，因此，前五個單位需時 $10 \times 3.738 = 37.38$ 小時

單位	改良率							
	60%	65%	70%	75%	80%	85%	90%	95%
1	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
2	1.600	1.650	1.700	1.750	1.800	1.850	1.900	1.950
3	2.045	2.155	2.268	2.384	2.502	2.623	2.746	2.872
4	2.405	2.578	2.758	2.946	3.142	3.345	3.556	3.774
5	2.710	2.946	3.195	3.459	3.738	4.031	4.339	4.662
6	2.977	3.274	3.593	3.934	4.299	4.688	5.101	5.538
7	3.216	3.572	3.960	4.380	4.834	5.322	5.845	6.404
8	3.432	3.847	4.303	4.802	5.346	5.936	6.574	7.261
9	3.630	4.102	4.626	5.204	5.839	6.533	7.290	8.111
10	3.813	4.341	4.931	5.589	6.315	7.116	7.994	8.955
12	4.144	4.780	5.501	6.315	7.227	8.244	9.374	10.62
14	4.438	5.177	6.026	6.994	8.092	9.331	10.72	12.27
16	4.704	5.541	6.514	7.635	8.920	10.38	12.04	13.91
18	4.946	5.879	6.972	8.245	9.716	11.41	13.33	15.52
20	5.171	6.195	7.407	8.828	10.48	12.40	14.61	17.13
22	5.379	6.492	7.819	9.388	11.23	13.38	15.86	18.72
24	5.574	6.773	8.213	9.928	11.95	14.33	17.10	20.31
25	5.668	6.909	8.404	10.19	12.31	14.80	17.71	21.10
30	6.097	7.540	9.305	11.45	14.02	17.09	20.73	25.00
35	6.478	8.109	10.13	12.72	15.64	19.29	23.67	28.86
40	6.821	8.631	10.90	13.72	17.19	21.43	26.54	32.68
45	7.134	9.114	11.62	14.77	18.68	23.50	29.37	36.47
50	7.422	9.565	12.31	15.78	20.12	25.51	32.14	40.22
60	7.941	10.39	13.57	17.67	22.87	29.41	37.57	47.65
70	8.401	11.13	14.74	19.43	25.47	33.17	42.87	54.99
80	8.814	11.82	15.82	21.09	27.96	36.80	48.05	62.25
90	9.191	12.45	16.83	22.67	30.35	40.32	53.14	69.45
100	9.539	13.03	17.79	24.18	32.65	43.75	58.14	76.59
20	10.16	14.11	19.57	27.02	37.05	50.39	67.93	90.71
40	10.72	15.08	21.20	29.67	41.22	56.78	77.46	104.7
60	11.21	15.97	22.72	32.17	45.20	62.95	86.80	118.5
80	11.67	16.79	24.14	34.54	49.03	68.95	95.96	132.1
100	12.09	17.55	25.48	36.80	52.72	74.79	105.0	145.7
50	13.01	19.28	28.56	42.08	61.47	88.83	126.9	179.2
90	13.81	20.81	31.34	46.94	69.66	102.2	148.2	212.2
50	14.51	22.18	33.89	51.48	77.43	115.1	169.0	244.8
100	15.14	23.44	36.26	55.75	84.85	127.6	189.3	277.0
50	15.72	24.60	38.48	59.80	91.97	139.7	209.2	309.0
100	16.26	25.68	40.58	63.68	98.851	151.5	228.8	340.6

Source: Albert N. Schreiber, Richard A. Johnson, Robert C. Meier, William T. Newell, and Henry C. Fischer, *Cases in Manufacturing Management* (New York: McGraw-Hill, 1965), p. 465. Reprinted by permission of McGraw-Hill, ©1965.