

# Mortgages

[someonesdad1@gmail.com](mailto:someonesdad1@gmail.com) 2 May 2011

I haven't bought a house in decades, but when my wife and I were shopping for one, I used the following table to help me quickly estimate what my mortgage payment was going to be. Of course, this is only the principle and interest; it **doesn't include taxes and insurance**. But it was a quick way to estimate what the monthly mortgage payment would be. The accuracy was suitable for rough figuring with paper and pencil.

Monthly payment per \$1000 principal (compounding period = 1 month)

%/yr	Years											
	3	4	5	6	7	8	9	10	15	20	25	30
0.50	27.99	21.05	16.88	14.10	12.12	10.63	9.471	8.545	5.768	4.379	3.547	2.992
1.00	28.21	21.26	17.09	14.32	12.33	10.84	9.686	8.760	5.985	4.599	3.769	3.216
1.50	28.42	21.48	17.31	14.53	12.55	11.06	9.904	8.979	6.207	4.825	3.999	3.451
2.00	28.64	21.70	17.53	14.75	12.77	11.28	10.13	9.201	6.435	5.059	4.239	3.696
2.50	28.86	21.91	17.75	14.97	12.99	11.50	10.35	9.427	6.668	5.299	4.486	3.951
3.00	29.08	22.13	17.97	15.19	13.21	11.73	10.58	9.656	6.906	5.546	4.742	4.216
3.50	29.30	22.36	18.19	15.42	13.44	11.96	10.81	9.889	7.149	5.800	5.006	4.490
4.00	29.52	22.58	18.42	15.65	13.67	12.19	11.04	10.12	7.397	6.060	5.278	4.774
4.50	29.75	22.80	18.64	15.87	13.90	12.42	11.28	10.36	7.650	6.326	5.558	5.067
5.00	29.97	23.03	18.87	16.10	14.13	12.66	11.52	10.61	7.908	6.600	5.846	5.368
5.50	30.20	23.26	19.10	16.34	14.37	12.90	11.76	10.85	8.171	6.879	6.141	5.678
6.00	30.42	23.49	19.33	16.57	14.61	13.14	12.01	11.10	8.439	7.164	6.443	5.996
6.50	30.65	23.71	19.57	16.81	14.85	13.39	12.25	11.35	8.711	7.456	6.752	6.321
7.00	30.88	23.95	19.80	17.05	15.09	13.63	12.51	11.61	8.988	7.753	7.068	6.653
7.50	31.11	24.18	20.04	17.29	15.34	13.88	12.76	11.87	9.270	8.056	7.390	6.992
8.00	31.34	24.41	20.28	17.53	15.59	14.14	13.02	12.13	9.557	8.364	7.718	7.338
8.50	31.57	24.65	20.52	17.78	15.84	14.39	13.28	12.40	9.847	8.678	8.052	7.689
9.00	31.80	24.89	20.76	18.03	16.09	14.65	13.54	12.67	10.14	8.997	8.392	8.046
9.50	32.03	25.12	21.00	18.27	16.34	14.91	13.81	12.94	10.44	9.321	8.737	8.409
10.00	32.27	25.36	21.25	18.53	16.60	15.17	14.08	13.22	10.75	9.650	9.087	8.776
10.50	32.50	25.60	21.49	18.78	16.86	15.44	14.35	13.49	11.05	9.984	9.442	9.147
11.00	32.74	25.85	21.74	19.03	17.12	15.71	14.63	13.78	11.37	10.32	9.801	9.523
11.50	32.98	26.09	21.99	19.29	17.39	15.98	14.90	14.06	11.68	10.66	10.16	9.903
12.00	33.21	26.33	22.24	19.55	17.65	16.25	15.18	14.35	12.00	11.01	10.53	10.29
12.50	33.45	26.58	22.50	19.81	17.92	16.53	15.47	14.64	12.33	11.36	10.90	10.67
13.00	33.69	26.83	22.75	20.07	18.19	16.81	15.75	14.93	12.65	11.72	11.28	11.06
13.50	33.94	27.08	23.01	20.34	18.46	17.09	16.04	15.23	12.98	12.07	11.66	11.45
14.00	34.18	27.33	23.27	20.61	18.74	17.37	16.33	15.53	13.32	12.44	12.04	11.85
14.50	34.42	27.58	23.53	20.87	19.02	17.66	16.63	15.83	13.66	12.80	12.42	12.25
15.00	34.67	27.83	23.79	21.15	19.30	17.95	16.92	16.13	14.00	13.17	12.81	12.64

The table entries are  $\frac{i}{1.2(1-A)}$  where

i = yearly interest in %

T = time in years

$$A = \left(1 + \frac{i}{1200}\right)^{-12T}$$

Examples: A 10 year loan of \$38,000 at 8.0% per year will require a monthly payment of  $38 \times 12.13 = \$461$ .

A 30 year loan of 271,100 at 4.25% per year interest: here, we have to use linear interpolation in the table. Under the 30 year column for the interest rates of 4% and 4.5%, we get 4.774 and 5.067.

Average these together to get  $(4.774 + 5.067)/2 = 4.9205$ . Then our monthly payment will be  $271.1 \times 4.9205$  or \$1334.