

CORRESPONDENCE

TABLE for obtaining m_x from q_x

To the Editor of the Transactions of the Faculty of Actuaries.

SIR,—The accompanying table* has been made up to enable m_x to be obtained by inspection from q_x for all values of q_x not exceeding '06940, or in other words, where the difference between m_x and q_x is less than '00250. The table is of use in getting out the central death, marriage or secession rates in making up combined marriage and mortality, secession and mortality tables, etc. For example, for all values of q_x from '00316 to '00546 inclusive, the addition to obtain m_x is '00001; thus, if $q_x = '00435$, $m_x = '00436$.

The table covers the bulk of the values required in any case, and to carry it to higher values of q_x would make it of unwieldy length. The values of m_x beyond the limits shown are most easily obtained from a table of reciprocals, as the difference between the reciprocals of q_x and m_x is '5.

I may add that the table was constructed by finding values of q_x corresponding to the values of $m_x - q_x$, or Δ , = '000005, '000015, etc., the formula being $q_x = \frac{1}{2}\{(\Delta^2 + 8\Delta)^{\frac{1}{2}} - \Delta\}$. This gave the limiting values of q_x for the values of $\Delta = '00000$, '00001, etc., and the correctness of these limiting values was afterwards checked inversely by the ordinary formula for m_x .

I am, &c.,

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* See p. 200. The table of course holds good for any two quantities x and y so related that $y = \frac{x}{1 + \frac{1}{2}x}$, or $x = \frac{y}{1 - \frac{1}{2}y}$ where y is given. *E.g.* if y be the rate of interest on the average of the funds of an Office for any year, say 3·848 per cent., the addition for the effective rate—Mr. G. F. Hardy's formula—is shown by the table to be 075.—ED.

TABLE showing addition (Δ) to q_x to obtain m_x .

$q_x=or<$	$\Delta \times 10^5$	$q_x=or<$	$\Delta \times 10^5$	$q_x=or<$	$\Delta \times 10^5$	$q_x=or<$	$\Delta \times 10^5$	$q_x=or<$	$\Delta \times 10^5$
·00315	0	·03152	50	·04433	100	·05411	150	·06232	200
·00546	1	·03183	51	·04455	101	·05429	151	·06248	201
·00705	2	·03214	52	·04476	102	·05446	152	·06263	202
·00834	3	·03244	53	·04498	103	·05464	153	·06278	203
·00946	4	·03274	54	·04519	104	·05482	154	·06293	204
·01046	5	·03304	55	·04541	105	·05499	155	·06309	205
·01136	6	·03333	56	·04562	106	·05516	156	·06324	206
·01221	7	·03362	57	·04583	107	·05534	157	·06339	207
·01299	8	·03391	58	·04604	108	·05551	158	·06354	208
·01373	9	·03420	59	·04625	109	·05568	159	·06369	209
·01443	10	·03448	60	·04646	110	·05586	160	·06384	210
·01510	11	·03476	61	·04666	111	·05603	161	·06398	211
·01574	12	·03504	62	·04687	112	·05620	162	·06413	212
·01636	13	·03532	63	·04708	113	·05637	163	·06428	213
·01695	14	·03559	64	·04728	114	·05654	164	·06443	214
·01752	15	·03586	65	·04748	115	·05671	165	·06458	215
·01808	16	·03613	66	·04769	116	·05687	166	·06472	216
·01862	17	·03640	67	·04789	117	·05704	167	·06487	217
·01914	18	·03667	68	·04809	118	·05721	168	·06502	218
·01965	19	·03693	69	·04829	119	·05738	169	·06516	219
·02014	20	·03719	70	·04849	120	·05754	170	·06531	220
·02062	21	·03745	71	·04869	121	·05771	171	·06545	221
·02110	22	·03771	72	·04888	122	·05788	172	·06560	222
·02156	23	·03797	73	·04908	123	·05804	173	·06574	223
·02201	24	·03822	74	·04928	124	·05821	174	·06589	224
·02245	25	·03848	75	·04947	125	·05837	175	·06603	225
·02288	26	·03873	76	·04967	126	·05853	176	·06618	226
·02331	27	·03898	77	·04986	127	·05870	177	·06632	227
·02373	28	·03923	78	·05005	128	·05886	178	·06646	228
·02414	29	·03947	79	·05024	129	·05902	179	·06661	229
·02454	30	·03972	80	·05043	130	·05918	180	·06675	230
·02494	31	·03996	81	·05063	131	·05934	181	·06689	231
·02533	32	·04020	82	·05081	132	·05950	182	·06703	232
·02571	33	·04045	83	·05100	133	·05966	183	·06717	233
·02609	34	·04068	84	·05119	134	·05982	184	·06732	234
·02646	35	·04092	85	·05138	135	·05998	185	·06746	235
·02683	36	·04116	86	·05157	136	·06014	186	·06760	236
·02719	37	·04139	87	·05175	137	·06030	187	·06774	237
·02755	38	·04163	88	·05194	138	·06046	188	·06788	238
·02791	39	·04186	89	·05212	139	·06062	189	·06802	239
·02825	40	·04209	90	·05231	140	·06078	190	·06816	240
·02860	41	·04232	91	·05249	141	·06093	191	·06830	241
·02894	42	·04255	92	·05267	142	·06109	192	·06843	242
·02927	43	·04277	93	·05285	143	·06124	193	·06857	243
·02961	44	·04300	94	·05304	144	·06140	194	·06871	244
·02993	45	·04322	95	·05322	145	·06156	195	·06885	245
·03026	46	·04345	96	·05340	146	·06171	196	·06899	246
·03058	47	·04367	97	·05358	147	·06186	197	·06912	247
·03090	48	·04389	98	·05376	148	·06202	198	·06926	248
·03121	49	·04411	99	·05393	149	·06217	199	·06940	249