

# Binomialverteilung

# einfache Wahrscheinlichkeiten

$$P_{n;p}(X = k) = \binom{n}{k} \cdot p^k \cdot (1-p)^{n-k}$$

|                                      |          | <b>p</b> |        |        |        |        |        |        |        |        |        |        |           |           |
|--------------------------------------|----------|----------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|-----------|-----------|
| <b>n</b>                             | <b>k</b> | 0,02     | 0,03   | 0,05   | 0,10   | 1/6    | 0,20   | 0,25   | 0,30   | 1/3    | 0,40   | 0,50   |           | <b>n</b>  |
| <b>2</b>                             | 0        | 0,9604   | 0,9409 | 0,9025 | 0,8100 | 0,6944 | 0,6400 | 0,5625 | 0,4900 | 0,4444 | 0,3600 | 0,2500 | <b>2</b>  | <b>2</b>  |
|                                      | 1        | 0,0392   | 0,0582 | 0,0950 | 0,1800 | 0,2778 | 0,3200 | 0,3750 | 0,4200 | 0,4444 | 0,4800 | 0,5000 | <b>1</b>  |           |
|                                      | 2        | 0,0004   | 0,0009 | 0,0025 | 0,0100 | 0,0278 | 0,0400 | 0,0625 | 0,0900 | 0,1111 | 0,1600 | 0,2500 | <b>0</b>  |           |
| <b>3</b>                             | 0        | 0,9412   | 0,9127 | 0,8574 | 0,7290 | 0,5787 | 0,5120 | 0,4219 | 0,3430 | 0,2963 | 0,2160 | 0,1250 | <b>3</b>  | <b>3</b>  |
|                                      | 1        | 0,0576   | 0,0847 | 0,1354 | 0,2430 | 0,3472 | 0,3840 | 0,4219 | 0,4410 | 0,4444 | 0,4320 | 0,3750 | <b>2</b>  |           |
|                                      | 2        | 0,0012   | 0,0026 | 0,0071 | 0,0270 | 0,0694 | 0,0960 | 0,1406 | 0,1890 | 0,2222 | 0,2880 | 0,3750 | <b>1</b>  |           |
|                                      | 3        |          |        | 0,0001 | 0,0010 | 0,0046 | 0,0080 | 0,0156 | 0,0270 | 0,0370 | 0,0640 | 0,1250 | <b>0</b>  |           |
| <b>4</b>                             | 0        | 0,9224   | 0,8853 | 0,8145 | 0,6561 | 0,4823 | 0,4096 | 0,3164 | 0,2401 | 0,1975 | 0,1296 | 0,0625 | <b>4</b>  | <b>4</b>  |
|                                      | 1        | 0,0753   | 0,1095 | 0,1715 | 0,2916 | 0,3858 | 0,4096 | 0,4219 | 0,4116 | 0,3951 | 0,3456 | 0,2500 | <b>3</b>  |           |
|                                      | 2        | 0,0023   | 0,0051 | 0,0135 | 0,0486 | 0,1157 | 0,1536 | 0,2109 | 0,2646 | 0,2963 | 0,3456 | 0,3750 | <b>2</b>  |           |
|                                      | 3        |          | 0,0001 | 0,0005 | 0,0036 | 0,0154 | 0,0256 | 0,0469 | 0,0756 | 0,0988 | 0,1536 | 0,2500 | <b>1</b>  |           |
|                                      | 4        |          |        |        | 0,0001 | 0,0008 | 0,0016 | 0,0039 | 0,0081 | 0,0123 | 0,0256 | 0,0625 | <b>0</b>  |           |
| <b>5</b>                             | 0        | 0,9039   | 0,8587 | 0,7738 | 0,5905 | 0,4019 | 0,3277 | 0,2373 | 0,1681 | 0,1317 | 0,0778 | 0,0313 | <b>5</b>  | <b>5</b>  |
|                                      | 1        | 0,0922   | 0,1328 | 0,2036 | 0,3281 | 0,4019 | 0,4096 | 0,3955 | 0,3602 | 0,3292 | 0,2592 | 0,1563 | <b>4</b>  |           |
|                                      | 2        | 0,0038   | 0,0082 | 0,0214 | 0,0729 | 0,1608 | 0,2048 | 0,2637 | 0,3087 | 0,3292 | 0,3456 | 0,3125 | <b>3</b>  |           |
|                                      | 3        | 0,0001   | 0,0003 | 0,0011 | 0,0081 | 0,0322 | 0,0512 | 0,0879 | 0,1323 | 0,1646 | 0,2304 | 0,3125 | <b>2</b>  |           |
|                                      | 4        |          |        |        | 0,0005 | 0,0032 | 0,0064 | 0,0146 | 0,0284 | 0,0412 | 0,0768 | 0,1563 | <b>1</b>  |           |
|                                      | 5        |          |        |        |        | 0,0001 | 0,0003 | 0,0010 | 0,0024 | 0,0041 | 0,0102 | 0,0313 | <b>0</b>  |           |
| <b>6</b>                             | 0        | 0,8858   | 0,8330 | 0,7351 | 0,5314 | 0,3349 | 0,2621 | 0,1780 | 0,1176 | 0,0878 | 0,0467 | 0,0156 | <b>6</b>  | <b>6</b>  |
|                                      | 1        | 0,1085   | 0,1546 | 0,2321 | 0,3543 | 0,4019 | 0,3932 | 0,3560 | 0,3025 | 0,2634 | 0,1866 | 0,0938 | <b>5</b>  |           |
|                                      | 2        | 0,0055   | 0,0120 | 0,0305 | 0,0984 | 0,2009 | 0,2458 | 0,2966 | 0,3241 | 0,3292 | 0,3110 | 0,2344 | <b>4</b>  |           |
|                                      | 3        | 0,0002   | 0,0005 | 0,0021 | 0,0146 | 0,0536 | 0,0819 | 0,1318 | 0,1852 | 0,2195 | 0,2765 | 0,3125 | <b>3</b>  |           |
|                                      | 4        |          |        | 0,0001 | 0,0012 | 0,0080 | 0,0154 | 0,0330 | 0,0595 | 0,0823 | 0,1382 | 0,2344 | <b>2</b>  |           |
|                                      | 5        |          |        |        | 0,0001 | 0,0006 | 0,0015 | 0,0044 | 0,0102 | 0,0165 | 0,0369 | 0,0938 | <b>1</b>  |           |
|                                      | 6        |          |        |        |        |        | 0,0001 | 0,0002 | 0,0007 | 0,0014 | 0,0041 | 0,0156 | <b>0</b>  |           |
| <b>7</b>                             | 0        | 0,8681   | 0,8080 | 0,6983 | 0,4783 | 0,2791 | 0,2097 | 0,1335 | 0,0824 | 0,0585 | 0,0280 | 0,0078 | <b>7</b>  | <b>7</b>  |
|                                      | 1        | 0,1240   | 0,1749 | 0,2573 | 0,3720 | 0,3907 | 0,3670 | 0,3115 | 0,2471 | 0,2048 | 0,1306 | 0,0547 | <b>6</b>  |           |
|                                      | 2        | 0,0076   | 0,0162 | 0,0406 | 0,1240 | 0,2344 | 0,2753 | 0,3115 | 0,3177 | 0,3073 | 0,2613 | 0,1641 | <b>5</b>  |           |
|                                      | 3        | 0,0003   | 0,0008 | 0,0036 | 0,0230 | 0,0781 | 0,1147 | 0,1730 | 0,2269 | 0,2561 | 0,2903 | 0,2734 | <b>4</b>  |           |
|                                      | 4        |          |        | 0,0002 | 0,0026 | 0,0156 | 0,0287 | 0,0577 | 0,0972 | 0,1280 | 0,1935 | 0,2734 | <b>3</b>  |           |
|                                      | 5        |          |        |        | 0,0002 | 0,0019 | 0,0043 | 0,0115 | 0,0250 | 0,0384 | 0,0774 | 0,1641 | <b>2</b>  |           |
|                                      | 6        |          |        |        |        | 0,0001 | 0,0004 | 0,0013 | 0,0036 | 0,0064 | 0,0172 | 0,0547 | <b>1</b>  |           |
|                                      | 7        |          |        |        |        |        | 0,0001 | 0,0002 | 0,0005 | 0,0016 | 0,0078 |        | <b>0</b>  |           |
| <b>8</b>                             | 0        | 0,8508   | 0,7837 | 0,6634 | 0,4305 | 0,2326 | 0,1678 | 0,1001 | 0,0576 | 0,0390 | 0,0168 | 0,0039 | <b>8</b>  | <b>8</b>  |
|                                      | 1        | 0,1389   | 0,1939 | 0,2793 | 0,3826 | 0,3721 | 0,3355 | 0,2670 | 0,1977 | 0,1561 | 0,0896 | 0,0313 | <b>7</b>  |           |
|                                      | 2        | 0,0099   | 0,0210 | 0,0515 | 0,1488 | 0,2605 | 0,2936 | 0,3115 | 0,2965 | 0,2731 | 0,2090 | 0,1094 | <b>6</b>  |           |
|                                      | 3        | 0,0004   | 0,0013 | 0,0054 | 0,0331 | 0,1042 | 0,1468 | 0,2076 | 0,2541 | 0,2731 | 0,2787 | 0,2188 | <b>5</b>  |           |
|                                      | 4        |          | 0,0001 | 0,0004 | 0,0046 | 0,0260 | 0,0459 | 0,0865 | 0,1361 | 0,1707 | 0,2322 | 0,2734 | <b>4</b>  |           |
|                                      | 5        |          |        |        | 0,0004 | 0,0042 | 0,0092 | 0,0231 | 0,0467 | 0,0683 | 0,1239 | 0,2188 | <b>3</b>  |           |
|                                      | 6        |          |        |        |        | 0,0004 | 0,0011 | 0,0038 | 0,0100 | 0,0171 | 0,0413 | 0,1094 | <b>2</b>  |           |
|                                      | 7        |          |        |        |        |        | 0,0001 | 0,0004 | 0,0012 | 0,0024 | 0,0079 | 0,0313 | <b>1</b>  |           |
|                                      | 8        |          |        |        |        |        |        | 0,0001 | 0,0002 | 0,0007 | 0,0039 |        | <b>0</b>  |           |
| <b>9</b>                             | 0        | 0,8337   | 0,7602 | 0,6302 | 0,3874 | 0,1938 | 0,1342 | 0,0751 | 0,0404 | 0,0260 | 0,0101 | 0,0020 | <b>9</b>  | <b>9</b>  |
|                                      | 1        | 0,1531   | 0,2116 | 0,2985 | 0,3874 | 0,3489 | 0,3020 | 0,2253 | 0,1556 | 0,1171 | 0,0605 | 0,0176 | <b>8</b>  |           |
|                                      | 2        | 0,0125   | 0,0262 | 0,0629 | 0,1722 | 0,2791 | 0,3020 | 0,3003 | 0,2668 | 0,2341 | 0,1612 | 0,0703 | <b>7</b>  |           |
|                                      | 3        | 0,0006   | 0,0019 | 0,0077 | 0,0446 | 0,1302 | 0,1762 | 0,2336 | 0,2668 | 0,2731 | 0,2508 | 0,1641 | <b>6</b>  |           |
|                                      | 4        |          | 0,0001 | 0,0006 | 0,0074 | 0,0391 | 0,0661 | 0,1168 | 0,1715 | 0,2048 | 0,2508 | 0,2461 | <b>5</b>  |           |
|                                      | 5        |          |        |        | 0,0008 | 0,0078 | 0,0165 | 0,0389 | 0,0735 | 0,1024 | 0,1672 | 0,2461 | <b>4</b>  |           |
|                                      | 6        |          |        |        | 0,0001 | 0,0010 | 0,0028 | 0,0087 | 0,0210 | 0,0341 | 0,0743 | 0,1641 | <b>3</b>  |           |
|                                      | 7        |          |        |        |        | 0,0001 | 0,0003 | 0,0012 | 0,0039 | 0,0073 | 0,0212 | 0,0703 | <b>2</b>  |           |
|                                      | 8        |          |        |        |        |        |        | 0,0001 | 0,0004 | 0,0009 | 0,0035 | 0,0176 | <b>1</b>  |           |
|                                      | 9        |          |        |        |        |        |        |        | 0,0001 | 0,0003 | 0,0016 | 0,0098 | <b>0</b>  |           |
| <b>10</b>                            | 0        | 0,8171   | 0,7374 | 0,5987 | 0,3487 | 0,1615 | 0,1074 | 0,0563 | 0,0282 | 0,0173 | 0,0060 | 0,0010 | <b>10</b> | <b>10</b> |
|                                      | 1        | 0,1667   | 0,2281 | 0,3151 | 0,3874 | 0,3230 | 0,2684 | 0,1877 | 0,1211 | 0,0867 | 0,0403 | 0,0098 | <b>9</b>  |           |
|                                      | 2        | 0,0153   | 0,0317 | 0,0746 | 0,1937 | 0,2907 | 0,3020 | 0,2816 | 0,2335 | 0,1951 | 0,1209 | 0,0439 | <b>8</b>  |           |
|                                      | 3        | 0,0008   | 0,0026 | 0,0105 | 0,0574 | 0,1550 | 0,2013 | 0,2503 | 0,2668 | 0,2601 | 0,2150 | 0,1172 | <b>7</b>  |           |
|                                      | 4        |          | 0,0001 | 0,0010 | 0,0112 | 0,0543 | 0,0881 | 0,1460 | 0,2001 | 0,2276 | 0,2508 | 0,2051 | <b>6</b>  |           |
|                                      | 5        |          |        | 0,0001 | 0,0015 | 0,0130 | 0,0264 | 0,0584 | 0,1029 | 0,1366 | 0,2007 | 0,2461 | <b>5</b>  |           |
|                                      | 6        |          |        |        | 0,0001 | 0,0022 | 0,0055 | 0,0162 | 0,0368 | 0,0569 | 0,1115 | 0,2051 | <b>4</b>  |           |
|                                      | 7        |          |        |        |        | 0,0002 | 0,0008 | 0,0031 | 0,0090 | 0,0163 | 0,0425 | 0,1172 | <b>3</b>  |           |
|                                      | 8        |          |        |        |        |        | 0,0001 | 0,0004 | 0,0014 | 0,0030 | 0,0106 | 0,0439 | <b>2</b>  |           |
|                                      | 9        |          |        |        |        |        |        |        | 0,0001 | 0,0003 | 0,0016 | 0,0098 | <b>1</b>  |           |
|                                      | 10       |          |        |        |        |        |        |        |        |        | 0,0001 | 0,0010 | <b>0</b>  |           |
| Nicht aufgeführte Werte sind 0,0000. |          |          |        |        |        |        |        |        |        |        |        |        |           |           |
| <b>n</b>                             |          | 0,98     | 0,97   | 0,95   | 0,90   | 5/6    | 0,80   | 0,75   | 0,70   | 2/3    | 0,60   | 0,50   | <b>k</b>  | <b>n</b>  |

$$P_{n;p}(X \leq k) = \sum_{i=0}^k \binom{n}{i} \cdot p^i \cdot (1-p)^{n-i}$$

|           |           | <b>p</b>                             |      |      |      |      |      |      |      |      |      |      |           |           |
|-----------|-----------|--------------------------------------|------|------|------|------|------|------|------|------|------|------|-----------|-----------|
| <b>n</b>  | <b>k</b>  | 0,02                                 | 0,03 | 0,05 | 0,10 | 1/6  | 0,20 | 0,25 | 0,30 | 1/3  | 0,40 | 0,50 |           | <b>n</b>  |
| <b>2</b>  | <b>0</b>  | 0,9604                               | 9409 | 9025 | 8100 | 6944 | 6400 | 5625 | 4900 | 4444 | 3600 | 2500 | <b>1</b>  | <b>2</b>  |
|           | <b>1</b>  | 9996                                 | 9991 | 9975 | 9900 | 9722 | 9600 | 9375 | 9100 | 8889 | 8400 | 7500 | <b>0</b>  |           |
| <b>3</b>  | <b>0</b>  | 0,9412                               | 9127 | 8574 | 7290 | 5787 | 5120 | 4219 | 3430 | 2963 | 2160 | 1250 | <b>2</b>  | <b>3</b>  |
|           | <b>1</b>  | 9988                                 | 9974 | 9928 | 9720 | 9259 | 8960 | 8438 | 7840 | 7407 | 6480 | 5000 | <b>1</b>  |           |
|           | <b>2</b>  |                                      |      | 9999 | 9990 | 9954 | 9920 | 9844 | 9730 | 9630 | 9360 | 8750 | <b>0</b>  |           |
| <b>4</b>  | <b>0</b>  | 0,9224                               | 8853 | 8145 | 6561 | 4823 | 4096 | 3164 | 2401 | 1975 | 1296 | 0625 | <b>3</b>  | <b>4</b>  |
|           | <b>1</b>  | 9977                                 | 9948 | 9860 | 9477 | 8681 | 8192 | 7383 | 6517 | 5926 | 4752 | 3125 | <b>2</b>  |           |
|           | <b>2</b>  |                                      | 9999 | 9995 | 9963 | 9838 | 9728 | 9492 | 9163 | 8889 | 8208 | 6875 | <b>1</b>  |           |
|           | <b>3</b>  |                                      |      |      | 9999 | 9992 | 9984 | 9961 | 9919 | 9877 | 9744 | 9375 | <b>0</b>  |           |
| <b>5</b>  | <b>0</b>  | 0,9039                               | 8587 | 7738 | 5905 | 4019 | 3277 | 2373 | 1681 | 1317 | 0778 | 0313 | <b>4</b>  | <b>5</b>  |
|           | <b>1</b>  | 9962                                 | 9915 | 9774 | 9185 | 8038 | 7373 | 6328 | 5282 | 4609 | 3370 | 1875 | <b>3</b>  |           |
|           | <b>2</b>  | 9999                                 | 9997 | 9988 | 9914 | 9645 | 9421 | 8965 | 8369 | 7901 | 6826 | 5000 | <b>2</b>  |           |
|           | <b>3</b>  |                                      |      |      | 9995 | 9967 | 9933 | 9844 | 9692 | 9547 | 9130 | 8125 | <b>1</b>  |           |
|           | <b>4</b>  |                                      |      |      |      | 9999 | 9997 | 9990 | 9976 | 9959 | 9898 | 9688 | <b>0</b>  |           |
| <b>6</b>  | <b>0</b>  | 0,8858                               | 8330 | 7351 | 5314 | 3349 | 2621 | 1780 | 1176 | 0878 | 0467 | 0156 | <b>5</b>  | <b>6</b>  |
|           | <b>1</b>  | 9943                                 | 9875 | 9672 | 8857 | 7368 | 6554 | 5339 | 4202 | 3512 | 2333 | 1094 | <b>4</b>  |           |
|           | <b>2</b>  | 9998                                 | 9995 | 9978 | 9842 | 9377 | 9011 | 8306 | 7443 | 6804 | 5443 | 3438 | <b>3</b>  |           |
|           | <b>3</b>  |                                      |      | 9999 | 9987 | 9913 | 9830 | 9624 | 9295 | 8999 | 8208 | 6563 | <b>2</b>  |           |
|           | <b>4</b>  |                                      |      |      | 9999 | 9993 | 9984 | 9954 | 9891 | 9822 | 9590 | 8906 | <b>1</b>  |           |
|           | <b>5</b>  |                                      |      |      |      | 9999 | 9998 | 9993 | 9986 | 9959 | 9844 |      | <b>0</b>  |           |
| <b>7</b>  | <b>0</b>  | 0,8681                               | 8080 | 6983 | 4783 | 2791 | 2097 | 1335 | 0824 | 0585 | 0280 | 0078 | <b>6</b>  | <b>7</b>  |
|           | <b>1</b>  | 9921                                 | 9829 | 9556 | 8503 | 6698 | 5767 | 4449 | 3294 | 2634 | 1586 | 0625 | <b>5</b>  |           |
|           | <b>2</b>  | 9997                                 | 9991 | 9962 | 9743 | 9042 | 8520 | 7564 | 6471 | 5706 | 4199 | 2266 | <b>4</b>  |           |
|           | <b>3</b>  |                                      |      | 9998 | 9973 | 9824 | 9667 | 9294 | 8740 | 8267 | 7102 | 5000 | <b>3</b>  |           |
|           | <b>4</b>  |                                      |      |      | 9998 | 9980 | 9953 | 9871 | 9712 | 9547 | 9037 | 7734 | <b>2</b>  |           |
|           | <b>5</b>  |                                      |      |      |      | 9999 | 9996 | 9987 | 9962 | 9931 | 9812 | 9375 | <b>1</b>  |           |
|           | <b>6</b>  |                                      |      |      |      |      | 9999 | 9998 | 9995 | 9984 | 9922 |      | <b>0</b>  |           |
| <b>8</b>  | <b>0</b>  | 0,8508                               | 7837 | 6634 | 4305 | 2326 | 1678 | 1001 | 0576 | 0390 | 0168 | 0039 | <b>7</b>  | <b>8</b>  |
|           | <b>1</b>  | 9897                                 | 9777 | 9428 | 8131 | 6047 | 5033 | 3671 | 2553 | 1951 | 1064 | 0352 | <b>6</b>  |           |
|           | <b>2</b>  | 9996                                 | 9987 | 9942 | 9619 | 8652 | 7969 | 6785 | 5518 | 4682 | 3154 | 1445 | <b>5</b>  |           |
|           | <b>3</b>  |                                      | 9999 | 9996 | 9950 | 9693 | 9437 | 8862 | 8059 | 7414 | 5941 | 3633 | <b>4</b>  |           |
|           | <b>4</b>  |                                      |      |      | 9996 | 9954 | 9896 | 9727 | 9420 | 9121 | 8263 | 6367 | <b>3</b>  |           |
|           | <b>5</b>  |                                      |      |      |      | 9996 | 9988 | 9958 | 9887 | 9803 | 9502 | 8555 | <b>2</b>  |           |
|           | <b>6</b>  |                                      |      |      |      |      | 9999 | 9996 | 9987 | 9974 | 9915 | 9648 | <b>1</b>  |           |
|           | <b>7</b>  |                                      |      |      |      |      |      | 9999 | 9998 | 9995 | 9984 | 9922 | <b>0</b>  |           |
| <b>9</b>  | <b>0</b>  | 0,8337                               | 7602 | 6302 | 3874 | 1938 | 1342 | 0751 | 0404 | 0260 | 0101 | 0020 | <b>8</b>  | <b>9</b>  |
|           | <b>1</b>  | 9869                                 | 9718 | 9288 | 7748 | 5427 | 4362 | 3003 | 1960 | 1431 | 0705 | 0195 | <b>7</b>  |           |
|           | <b>2</b>  | 9994                                 | 9980 | 9916 | 9470 | 8217 | 7382 | 6007 | 4628 | 3772 | 2318 | 0898 | <b>6</b>  |           |
|           | <b>3</b>  |                                      | 9999 | 9994 | 9917 | 9520 | 9144 | 8343 | 7297 | 6503 | 4826 | 2539 | <b>5</b>  |           |
|           | <b>4</b>  |                                      |      |      | 9991 | 9910 | 9804 | 9511 | 9012 | 8552 | 7334 | 5000 | <b>4</b>  |           |
|           | <b>5</b>  |                                      |      |      | 9999 | 9989 | 9969 | 9900 | 9747 | 9576 | 9006 | 7461 | <b>3</b>  |           |
|           | <b>6</b>  |                                      |      |      |      | 9999 | 9997 | 9987 | 9957 | 9917 | 9750 | 9102 | <b>2</b>  |           |
|           | <b>7</b>  |                                      |      |      |      |      | 9999 | 9996 | 9990 | 9962 | 9805 | 9102 | <b>1</b>  |           |
|           | <b>8</b>  |                                      |      |      |      |      |      | 9999 | 9999 | 9997 | 9980 |      | <b>0</b>  |           |
| <b>10</b> | <b>0</b>  | 0,8171                               | 7374 | 5987 | 3487 | 1615 | 1074 | 0563 | 0282 | 0173 | 0060 | 0010 | <b>9</b>  | <b>10</b> |
|           | <b>1</b>  | 9838                                 | 9655 | 9139 | 7361 | 4845 | 3758 | 2440 | 1493 | 1040 | 0464 | 0107 | <b>8</b>  |           |
|           | <b>2</b>  | 9991                                 | 9972 | 9885 | 9298 | 7752 | 6778 | 5256 | 3828 | 2991 | 1673 | 0547 | <b>7</b>  |           |
|           | <b>3</b>  |                                      | 9999 | 9990 | 9872 | 9303 | 8791 | 7759 | 6496 | 5593 | 3823 | 1719 | <b>6</b>  |           |
|           | <b>4</b>  |                                      |      | 9999 | 9984 | 9845 | 9672 | 9219 | 8497 | 7869 | 6331 | 3770 | <b>5</b>  |           |
|           | <b>5</b>  |                                      |      |      | 9999 | 9976 | 9936 | 9803 | 9527 | 9234 | 8338 | 6230 | <b>4</b>  |           |
|           | <b>6</b>  |                                      |      |      |      | 9997 | 9991 | 9965 | 9894 | 9803 | 9452 | 8281 | <b>3</b>  |           |
|           | <b>7</b>  |                                      |      |      |      |      | 9999 | 9996 | 9984 | 9966 | 9877 | 9453 | <b>2</b>  |           |
|           | <b>8</b>  |                                      |      |      |      |      |      | 9999 | 9996 | 9993 | 9983 | 9893 | <b>1</b>  |           |
|           | <b>9</b>  |                                      |      |      |      |      |      |      | 9999 | 9999 | 9999 | 9990 | <b>0</b>  |           |
| <b>11</b> | <b>0</b>  | 0,8007                               | 7153 | 5688 | 3138 | 1346 | 0859 | 0422 | 0198 | 0116 | 0036 | 0005 | <b>10</b> | <b>11</b> |
|           | <b>1</b>  | 9805                                 | 9587 | 8981 | 6974 | 4307 | 3221 | 1971 | 1130 | 0751 | 0302 | 0059 | <b>9</b>  |           |
|           | <b>2</b>  | 9988                                 | 9963 | 9848 | 9104 | 7268 | 6174 | 4552 | 3127 | 2341 | 1189 | 0327 | <b>8</b>  |           |
|           | <b>3</b>  |                                      | 9998 | 9984 | 9815 | 9044 | 8389 | 7133 | 5696 | 4726 | 2963 | 1133 | <b>7</b>  |           |
|           | <b>4</b>  |                                      |      | 9999 | 9972 | 9755 | 9496 | 8854 | 7897 | 7110 | 5328 | 2744 | <b>6</b>  |           |
|           | <b>5</b>  |                                      |      |      | 9997 | 9954 | 9883 | 9657 | 9218 | 8779 | 7535 | 5000 | <b>5</b>  |           |
|           | <b>6</b>  |                                      |      |      |      | 9994 | 9980 | 9924 | 9784 | 9614 | 9006 | 7256 | <b>4</b>  |           |
|           | <b>7</b>  |                                      |      |      |      | 9999 | 9998 | 9988 | 9957 | 9912 | 9707 | 8867 | <b>3</b>  |           |
|           | <b>8</b>  |                                      |      |      |      |      | 9999 | 9999 | 9994 | 9986 | 9941 | 9673 | <b>2</b>  |           |
|           | <b>9</b>  |                                      |      |      |      |      |      |      |      | 9999 | 9993 | 9941 | <b>1</b>  |           |
|           | <b>10</b> |                                      |      |      |      |      |      |      |      |      |      | 9995 | <b>0</b>  |           |
|           |           | Nicht aufgeführte Werte sind 1,0000. |      |      |      |      |      |      |      |      |      |      |           |           |
| <b>n</b>  |           | 0,98                                 | 0,97 | 0,95 | 0,90 | 5/6  | 0,80 | 0,75 | 0,70 | 2/3  | 0,60 | 0,50 | <b>k</b>  | <b>n</b>  |

Bei grau unterlegtem Eingang, d.h.  $p \geq \frac{1}{2}$ , gilt:  $P(X \leq k) = 1 - \text{abgelesener Wert}$ .

$$P_{n;p}(X \leq k) = \sum_{i=0}^k \binom{n}{i} \cdot p^i \cdot (1-p)^{n-i}$$

| n                                    | k  | p    |      |      |      |      |      |      |      |      |      |      | n  |    |  |  |
|--------------------------------------|----|------|------|------|------|------|------|------|------|------|------|------|----|----|--|--|
|                                      |    | 0,02 | 0,03 | 0,05 | 0,10 | 1/6  | 0,20 | 0,25 | 0,30 | 1/3  | 0,40 | 0,50 |    |    |  |  |
| 12                                   | 0  | 0,   | 7847 | 6938 | 5404 | 2824 | 1122 | 0687 | 0317 | 0138 | 0077 | 0022 | 11 | 12 |  |  |
|                                      | 1  |      | 9769 | 9514 | 8816 | 6590 | 3813 | 2749 | 1584 | 0850 | 0540 | 0196 | 10 |    |  |  |
|                                      | 2  |      | 9985 | 9952 | 9804 | 8891 | 6774 | 5583 | 3907 | 2528 | 1811 | 0834 | 9  |    |  |  |
|                                      | 3  |      | 9999 | 9997 | 9978 | 9744 | 8748 | 7946 | 6488 | 4925 | 3931 | 2253 | 8  |    |  |  |
|                                      | 4  |      |      |      | 9998 | 9957 | 9636 | 9274 | 8424 | 7237 | 6315 | 4382 | 7  |    |  |  |
|                                      | 5  |      |      |      |      | 9995 | 9921 | 9806 | 9456 | 8822 | 8223 | 6652 | 6  |    |  |  |
|                                      | 6  |      |      |      |      | 9999 | 9987 | 9961 | 9857 | 9614 | 9336 | 8418 | 5  |    |  |  |
|                                      | 7  |      |      |      |      |      | 9998 | 9994 | 9972 | 9905 | 9812 | 9427 | 4  |    |  |  |
|                                      | 8  |      |      |      |      |      |      | 9999 | 9996 | 9983 | 9961 | 9847 | 3  |    |  |  |
|                                      | 9  |      |      |      |      |      |      |      | 9998 | 9995 | 9972 | 9807 | 2  |    |  |  |
|                                      | 10 |      |      |      |      |      |      |      |      |      | 9997 | 9968 | 1  |    |  |  |
|                                      | 11 |      |      |      |      |      |      |      |      |      |      | 9998 | 0  |    |  |  |
| 13                                   | 0  | 0,   | 7690 | 6730 | 5133 | 2542 | 0935 | 0550 | 0238 | 0097 | 0013 | 0001 | 12 | 13 |  |  |
|                                      | 1  |      | 9730 | 9436 | 8646 | 6213 | 3365 | 2336 | 1267 | 0637 | 0385 | 0126 | 11 |    |  |  |
|                                      | 2  |      | 9980 | 9938 | 9755 | 8661 | 6281 | 5017 | 3326 | 2025 | 1387 | 0579 | 10 |    |  |  |
|                                      | 3  |      | 9999 | 9995 | 9969 | 9658 | 8419 | 7473 | 5843 | 4206 | 3224 | 1686 | 9  |    |  |  |
|                                      | 4  |      |      |      | 9997 | 9935 | 9488 | 9009 | 7940 | 6543 | 5520 | 3530 | 8  |    |  |  |
|                                      | 5  |      |      |      |      | 9991 | 9873 | 9700 | 9198 | 8346 | 7587 | 5744 | 7  |    |  |  |
|                                      | 6  |      |      |      |      | 9999 | 9976 | 9930 | 9757 | 9376 | 8965 | 7712 | 6  |    |  |  |
|                                      | 7  |      |      |      |      |      | 9997 | 9988 | 9944 | 9818 | 9653 | 9023 | 5  |    |  |  |
|                                      | 8  |      |      |      |      |      |      | 9998 | 9990 | 9960 | 9912 | 9679 | 4  |    |  |  |
|                                      | 9  |      |      |      |      |      |      |      | 9999 | 9993 | 9984 | 9922 | 3  |    |  |  |
|                                      | 10 |      |      |      |      |      |      |      |      | 9999 | 9998 | 9987 | 2  |    |  |  |
|                                      | 11 |      |      |      |      |      |      |      |      |      |      | 9999 | 1  |    |  |  |
| 12                                   |    |      |      |      |      |      |      |      |      |      |      | 0    |    |    |  |  |
| 14                                   | 0  | 0,   | 7536 | 6528 | 4877 | 2288 | 0779 | 0440 | 0178 | 0068 | 0034 | 0008 | 13 | 14 |  |  |
|                                      | 1  |      | 9690 | 9355 | 8470 | 5846 | 2960 | 1979 | 1010 | 0475 | 0274 | 0081 | 12 |    |  |  |
|                                      | 2  |      | 9975 | 9923 | 9699 | 8416 | 5795 | 4481 | 2811 | 1608 | 1053 | 0398 | 11 |    |  |  |
|                                      | 3  |      | 9999 | 9994 | 9958 | 9559 | 8063 | 6982 | 5213 | 3552 | 2612 | 1243 | 10 |    |  |  |
|                                      | 4  |      |      |      | 9996 | 9908 | 9310 | 8702 | 7415 | 5842 | 4755 | 2793 | 9  |    |  |  |
|                                      | 5  |      |      |      |      | 9985 | 9809 | 9561 | 8883 | 7805 | 6898 | 4859 | 8  |    |  |  |
|                                      | 6  |      |      |      |      | 9998 | 9959 | 9884 | 9617 | 9067 | 8505 | 6925 | 7  |    |  |  |
|                                      | 7  |      |      |      |      |      | 9993 | 9976 | 9897 | 9685 | 9424 | 8499 | 6  |    |  |  |
|                                      | 8  |      |      |      |      |      | 9999 | 9996 | 9978 | 9917 | 9826 | 9417 | 5  |    |  |  |
|                                      | 9  |      |      |      |      |      |      |      | 9997 | 9983 | 9960 | 9825 | 4  |    |  |  |
|                                      | 10 |      |      |      |      |      |      |      |      | 9998 | 9993 | 9961 | 3  |    |  |  |
|                                      | 11 |      |      |      |      |      |      |      |      |      | 9999 | 9994 | 2  |    |  |  |
|                                      | 12 |      |      |      |      |      |      |      |      |      |      | 9999 | 1  |    |  |  |
|                                      | 13 |      |      |      |      |      |      |      |      |      |      |      | 0  |    |  |  |
| 15                                   | 0  | 0,   | 7386 | 6333 | 4633 | 2059 | 0649 | 0352 | 0134 | 0047 | 0023 | 0005 | 14 | 15 |  |  |
|                                      | 1  |      | 9647 | 9270 | 8290 | 5490 | 2596 | 1671 | 0802 | 0353 | 0194 | 0052 | 13 |    |  |  |
|                                      | 2  |      | 9970 | 9906 | 9638 | 8159 | 5322 | 3980 | 2361 | 1268 | 0794 | 0271 | 12 |    |  |  |
|                                      | 3  |      | 9998 | 9992 | 9945 | 9444 | 7685 | 6482 | 4613 | 2969 | 2092 | 0905 | 11 |    |  |  |
|                                      | 4  |      |      | 9999 | 9994 | 9873 | 9102 | 8358 | 6865 | 5155 | 4041 | 2173 | 10 |    |  |  |
|                                      | 5  |      |      |      | 9999 | 9978 | 9726 | 9389 | 8516 | 7216 | 6184 | 4032 | 9  |    |  |  |
|                                      | 6  |      |      |      |      | 9997 | 9934 | 9819 | 9434 | 8689 | 7970 | 6098 | 8  |    |  |  |
|                                      | 7  |      |      |      |      |      | 9987 | 9958 | 9827 | 9500 | 9118 | 7869 | 7  |    |  |  |
|                                      | 8  |      |      |      |      |      | 9998 | 9992 | 9958 | 9848 | 9692 | 9050 | 6  |    |  |  |
|                                      | 9  |      |      |      |      |      |      | 9999 | 9992 | 9963 | 9915 | 9662 | 5  |    |  |  |
|                                      | 10 |      |      |      |      |      |      |      | 9999 | 9993 | 9982 | 9907 | 4  |    |  |  |
|                                      | 11 |      |      |      |      |      |      |      |      | 9999 | 9997 | 9981 | 3  |    |  |  |
|                                      | 12 |      |      |      |      |      |      |      |      |      |      | 9997 | 2  |    |  |  |
|                                      | 13 |      |      |      |      |      |      |      |      |      |      |      | 1  |    |  |  |
| 16                                   | 0  | 0,   | 7238 | 6143 | 4401 | 1853 | 0541 | 0281 | 0100 | 0033 | 0015 | 0003 | 15 | 16 |  |  |
|                                      | 1  |      | 9601 | 9182 | 8108 | 5147 | 2272 | 1407 | 0635 | 0261 | 0137 | 0033 | 14 |    |  |  |
|                                      | 2  |      | 9963 | 9887 | 9571 | 7892 | 4868 | 3518 | 1971 | 0994 | 0594 | 0183 | 13 |    |  |  |
|                                      | 3  |      | 9998 | 9989 | 9930 | 9316 | 7291 | 5981 | 4050 | 2459 | 1659 | 0651 | 12 |    |  |  |
|                                      | 4  |      |      | 9999 | 9991 | 9830 | 8866 | 7982 | 6302 | 4499 | 3391 | 1666 | 11 |    |  |  |
|                                      | 5  |      |      |      | 9999 | 9967 | 9622 | 9183 | 8103 | 6598 | 5469 | 3288 | 10 |    |  |  |
|                                      | 6  |      |      |      |      | 9995 | 9899 | 9733 | 9204 | 8247 | 7374 | 5272 | 9  |    |  |  |
|                                      | 7  |      |      |      |      | 9999 | 9979 | 9930 | 9729 | 9256 | 8735 | 7161 | 8  |    |  |  |
|                                      | 8  |      |      |      |      |      | 9996 | 9985 | 9925 | 9743 | 9500 | 8577 | 7  |    |  |  |
|                                      | 9  |      |      |      |      |      |      | 9998 | 9984 | 9929 | 9841 | 9417 | 6  |    |  |  |
|                                      | 10 |      |      |      |      |      |      |      | 9997 | 9984 | 9960 | 9809 | 5  |    |  |  |
|                                      | 11 |      |      |      |      |      |      |      |      | 9997 | 9992 | 9951 | 4  |    |  |  |
|                                      | 12 |      |      |      |      |      |      |      |      |      | 9999 | 9991 | 3  |    |  |  |
|                                      | 13 |      |      |      |      |      |      |      |      |      |      | 9999 | 2  |    |  |  |
|                                      | 14 |      |      |      |      |      |      |      |      |      |      |      | 1  |    |  |  |
| Nicht aufgeführte Werte sind 1,0000. |    |      |      |      |      |      |      |      |      |      |      |      |    |    |  |  |
| n                                    | k  | 0,98 | 0,97 | 0,95 | 0,90 | 5/6  | 0,80 | 0,75 | 0,70 | 2/3  | 0,60 | 0,50 | k  | n  |  |  |
|                                      |    |      |      |      |      |      |      | p    |      |      |      |      |    |    |  |  |

Bei grau unterlegtem Eingang, d.h.  $p \geq \frac{1}{2}$ , gilt:  $P(X \leq k) = 1 - \text{abgelesener Wert}$ .

$$P_{n,p}(X \leq k) = \sum_{i=0}^k \binom{n}{i} \cdot p^i \cdot (1-p)^{n-i}$$

| n                                    | k  | p    |      |      |      |      |      |      |      |      |      |      | n    |    |    |
|--------------------------------------|----|------|------|------|------|------|------|------|------|------|------|------|------|----|----|
|                                      |    | 0,02 | 0,03 | 0,05 | 0,10 | 1/6  | 0,20 | 0,25 | 0,30 | 1/3  | 0,40 | 0,50 |      |    |    |
| 17                                   | 0  | 0,   | 7093 | 5958 | 4181 | 1668 | 0451 | 0225 | 0075 | 0023 | 0010 | 0002 | 0000 | 16 | 17 |
|                                      | 1  |      | 9554 | 9091 | 7922 | 4818 | 1983 | 1182 | 0501 | 0193 | 0096 | 0021 | 0001 | 15 |    |
|                                      | 2  |      | 9956 | 9866 | 9497 | 7618 | 4435 | 3096 | 1637 | 0774 | 0442 | 0123 | 0012 | 14 |    |
|                                      | 3  |      | 9997 | 9986 | 9912 | 9174 | 6887 | 5489 | 3530 | 2019 | 1304 | 0464 | 0064 | 13 |    |
|                                      | 4  |      |      | 9999 | 9988 | 9779 | 8604 | 7582 | 5739 | 3887 | 2814 | 1260 | 0245 | 12 |    |
|                                      | 5  |      |      |      | 9999 | 9953 | 9496 | 8943 | 7653 | 5968 | 4777 | 2639 | 0717 | 11 |    |
|                                      | 6  |      |      |      |      | 9992 | 9853 | 9623 | 8929 | 7752 | 6739 | 4478 | 1662 | 10 |    |
|                                      | 7  |      |      |      |      | 9999 | 9965 | 9891 | 9598 | 8954 | 8281 | 6405 | 3145 | 9  |    |
|                                      | 8  |      |      |      |      |      | 9993 | 9974 | 9876 | 9597 | 9245 | 8011 | 5000 | 8  |    |
|                                      | 9  |      |      |      |      |      | 9999 | 9995 | 9969 | 9873 | 9727 | 9081 | 6855 | 7  |    |
|                                      | 10 |      |      |      |      |      |      | 9999 | 9994 | 9968 | 9920 | 9652 | 8338 | 6  |    |
|                                      | 11 |      |      |      |      |      |      |      | 9999 | 9993 | 9981 | 9894 | 9283 | 5  |    |
|                                      | 12 |      |      |      |      |      |      |      |      | 9999 | 9997 | 9975 | 9755 | 4  |    |
|                                      | 13 |      |      |      |      |      |      |      |      |      |      | 9995 | 9936 | 3  |    |
|                                      | 14 |      |      |      |      |      |      |      |      |      |      | 9999 | 9988 | 2  |    |
|                                      | 15 |      |      |      |      |      |      |      |      |      |      |      | 9999 | 1  |    |
| 18                                   | 0  | 0,   | 6951 | 5780 | 3972 | 1501 | 0376 | 0180 | 0056 | 0016 | 0007 | 0001 | 0000 | 17 | 18 |
|                                      | 1  |      | 9505 | 8997 | 7735 | 4503 | 1728 | 0991 | 0395 | 0142 | 0068 | 0013 | 0001 | 16 |    |
|                                      | 2  |      | 9948 | 9843 | 9419 | 7338 | 4027 | 2713 | 1353 | 0600 | 0326 | 0082 | 0007 | 15 |    |
|                                      | 3  |      | 9996 | 9982 | 9891 | 9018 | 6479 | 5010 | 3057 | 1646 | 1017 | 0328 | 0038 | 14 |    |
|                                      | 4  |      |      | 9998 | 9985 | 9718 | 8318 | 7164 | 5187 | 3327 | 2311 | 0942 | 0154 | 13 |    |
|                                      | 5  |      |      |      | 9998 | 9936 | 9347 | 8671 | 7175 | 5344 | 4122 | 2088 | 0481 | 12 |    |
|                                      | 6  |      |      |      |      | 9988 | 9794 | 9487 | 8610 | 7217 | 6085 | 3743 | 1189 | 11 |    |
|                                      | 7  |      |      |      |      | 9998 | 9947 | 9837 | 9431 | 8593 | 7767 | 5634 | 2403 | 10 |    |
|                                      | 8  |      |      |      |      |      | 9989 | 9957 | 9807 | 9404 | 8924 | 7368 | 4073 | 9  |    |
|                                      | 9  |      |      |      |      |      | 9998 | 9991 | 9946 | 9790 | 9567 | 8653 | 5927 | 8  |    |
|                                      | 10 |      |      |      |      |      |      | 9998 | 9988 | 9939 | 9856 | 9424 | 7597 | 7  |    |
|                                      | 11 |      |      |      |      |      |      |      | 9998 | 9986 | 9961 | 9797 | 8811 | 6  |    |
|                                      | 12 |      |      |      |      |      |      |      |      | 9997 | 9991 | 9942 | 9519 | 5  |    |
|                                      | 13 |      |      |      |      |      |      |      |      |      | 9999 | 9987 | 9846 | 4  |    |
|                                      | 14 |      |      |      |      |      |      |      |      |      |      | 9998 | 9962 | 3  |    |
|                                      | 15 |      |      |      |      |      |      |      |      |      |      |      | 9993 | 2  |    |
| 16                                   |    |      |      |      |      |      |      |      |      |      |      | 9999 | 1    |    |    |
| 19                                   | 0  | 0,   | 6812 | 5606 | 3774 | 1351 | 0313 | 0144 | 0042 | 0011 | 0005 | 0001 | 0000 | 18 | 19 |
|                                      | 1  |      | 9454 | 8900 | 7547 | 4203 | 1502 | 0829 | 0310 | 0104 | 0047 | 0008 | 0000 | 17 |    |
|                                      | 2  |      | 9939 | 9817 | 9335 | 7054 | 3643 | 2369 | 1113 | 0462 | 0240 | 0055 | 0004 | 16 |    |
|                                      | 3  |      | 9995 | 9978 | 9868 | 8850 | 6070 | 4551 | 2631 | 1332 | 0787 | 0230 | 0022 | 15 |    |
|                                      | 4  |      |      | 9998 | 9980 | 9648 | 8011 | 6733 | 4654 | 2822 | 1879 | 0696 | 0096 | 14 |    |
|                                      | 5  |      |      |      | 9998 | 9914 | 9176 | 8369 | 6678 | 4739 | 3519 | 1629 | 0318 | 13 |    |
|                                      | 6  |      |      |      |      | 9983 | 9719 | 9324 | 8251 | 6655 | 5431 | 3081 | 0835 | 12 |    |
|                                      | 7  |      |      |      |      | 9997 | 9921 | 9767 | 9225 | 8180 | 7207 | 4878 | 1796 | 11 |    |
|                                      | 8  |      |      |      |      |      | 9982 | 9933 | 9713 | 9161 | 8538 | 6675 | 3238 | 10 |    |
|                                      | 9  |      |      |      |      |      | 9996 | 9984 | 9911 | 9674 | 9352 | 8139 | 5000 | 9  |    |
|                                      | 10 |      |      |      |      |      | 9999 | 9997 | 9977 | 9895 | 9759 | 9115 | 6762 | 8  |    |
|                                      | 11 |      |      |      |      |      |      |      | 9995 | 9972 | 9926 | 9648 | 8204 | 7  |    |
|                                      | 12 |      |      |      |      |      |      |      | 9999 | 9994 | 9981 | 9884 | 9165 | 6  |    |
|                                      | 13 |      |      |      |      |      |      |      |      | 9999 | 9996 | 9969 | 9682 | 5  |    |
|                                      | 14 |      |      |      |      |      |      |      |      |      | 9999 | 9994 | 9904 | 4  |    |
|                                      | 15 |      |      |      |      |      |      |      |      |      |      | 9999 | 9978 | 3  |    |
| 16                                   |    |      |      |      |      |      |      |      |      |      |      | 9996 | 2    |    |    |
| 20                                   | 0  | 0,   | 6676 | 5438 | 3585 | 1216 | 0261 | 0115 | 0032 | 0008 | 0003 | 0000 | 0000 | 19 | 20 |
|                                      | 1  |      | 9401 | 8802 | 7358 | 3917 | 1304 | 0692 | 0243 | 0076 | 0033 | 0005 | 0000 | 18 |    |
|                                      | 2  |      | 9929 | 9790 | 9245 | 6769 | 3287 | 2061 | 0913 | 0355 | 0176 | 0036 | 0002 | 17 |    |
|                                      | 3  |      | 9994 | 9973 | 9841 | 8670 | 5665 | 4114 | 2252 | 1071 | 0604 | 0160 | 0013 | 16 |    |
|                                      | 4  |      |      | 9997 | 9974 | 9568 | 7687 | 6296 | 4148 | 2375 | 1515 | 0510 | 0059 | 15 |    |
|                                      | 5  |      |      |      | 9997 | 9887 | 8982 | 8042 | 6172 | 4164 | 2972 | 1256 | 0207 | 14 |    |
|                                      | 6  |      |      |      |      | 9976 | 9629 | 9133 | 7858 | 6080 | 4793 | 2500 | 0577 | 13 |    |
|                                      | 7  |      |      |      |      | 9996 | 9887 | 9679 | 8982 | 7723 | 6615 | 4159 | 1316 | 12 |    |
|                                      | 8  |      |      |      |      | 9999 | 9972 | 9900 | 9591 | 8867 | 8095 | 5956 | 2517 | 11 |    |
|                                      | 9  |      |      |      |      |      | 9994 | 9974 | 9861 | 9520 | 9081 | 7553 | 4119 | 10 |    |
|                                      | 10 |      |      |      |      |      | 9999 | 9994 | 9961 | 9829 | 9624 | 8725 | 5881 | 9  |    |
|                                      | 11 |      |      |      |      |      |      | 9999 | 9991 | 9949 | 9870 | 9435 | 7483 | 8  |    |
|                                      | 12 |      |      |      |      |      |      |      | 9998 | 9987 | 9963 | 9790 | 8684 | 7  |    |
|                                      | 13 |      |      |      |      |      |      |      |      | 9997 | 9991 | 9935 | 9423 | 6  |    |
|                                      | 14 |      |      |      |      |      |      |      |      |      | 9998 | 9984 | 9793 | 5  |    |
|                                      | 15 |      |      |      |      |      |      |      |      |      |      | 9997 | 9941 | 4  |    |
|                                      | 16 |      |      |      |      |      |      |      |      |      |      |      | 9987 | 3  |    |
| 17                                   |    |      |      |      |      |      |      |      |      |      |      | 9998 | 2    |    |    |
| Nicht aufgeführte Werte sind 1,0000. |    |      |      |      |      |      |      |      |      |      |      |      |      |    |    |
| n                                    | k  | 0,98 | 0,97 | 0,95 | 0,90 | 5/6  | 0,80 | 0,75 | 0,70 | 2/3  | 0,60 | 0,50 | k    | n  |    |
|                                      |    | p    |      |      |      |      |      |      |      |      |      |      |      |    |    |

Bei grau unterlegtem Eingang, d.h.  $p \geq \frac{1}{2}$ , gilt:  $P(X \leq k) = 1 - \text{abgelesener Wert}$ .

$$P_{n;p}(X \leq k) = \sum_{i=0}^k \binom{n}{i} \cdot p^i \cdot (1-p)^{n-i}$$

| n                                    | k  | p      |      |      |      |      |      |      |      |      |      |      | n  |    |
|--------------------------------------|----|--------|------|------|------|------|------|------|------|------|------|------|----|----|
|                                      |    | 0,02   | 0,03 | 0,05 | 0,10 | 1/6  | 0,20 | 0,25 | 0,30 | 1/3  | 0,40 | 0,50 |    |    |
| 25                                   | 0  | 0,6035 | 4670 | 2774 | 0718 | 0105 | 0038 | 0008 | 0001 | 0000 | 0000 | 0000 | 24 | 25 |
|                                      | 1  | 9114   | 8280 | 6424 | 2712 | 0629 | 0274 | 0070 | 0016 | 0005 | 0001 | 0000 | 23 |    |
|                                      | 2  | 9868   | 9620 | 8729 | 5371 | 1887 | 0982 | 0321 | 0090 | 0035 | 0004 | 0000 | 22 |    |
|                                      | 3  | 9986   | 9938 | 9659 | 7636 | 3816 | 2340 | 0962 | 0332 | 0149 | 0024 | 0001 | 21 |    |
|                                      | 4  | 9999   | 9992 | 9928 | 9020 | 5937 | 4207 | 2137 | 0905 | 0462 | 0095 | 0005 | 20 |    |
|                                      | 5  |        | 9999 | 9988 | 9666 | 7720 | 6167 | 3783 | 1935 | 1120 | 0294 | 0020 | 19 |    |
|                                      | 6  |        |      | 9998 | 9905 | 8908 | 7800 | 5611 | 3407 | 2215 | 0736 | 0073 | 18 |    |
|                                      | 7  |        |      |      | 9977 | 9553 | 8909 | 7265 | 5118 | 3703 | 1536 | 0216 | 17 |    |
|                                      | 8  |        |      |      | 9995 | 9843 | 9532 | 8506 | 6769 | 5376 | 2735 | 0539 | 16 |    |
|                                      | 9  |        |      |      | 9999 | 9953 | 9827 | 9287 | 8106 | 6956 | 4246 | 1148 | 15 |    |
|                                      | 10 |        |      |      |      | 9988 | 9944 | 9703 | 9022 | 8220 | 5858 | 2122 | 14 |    |
|                                      | 11 |        |      |      |      | 9997 | 9985 | 9893 | 9558 | 9082 | 7323 | 3450 | 13 |    |
|                                      | 12 |        |      |      |      | 9999 | 9996 | 9966 | 9825 | 9585 | 8462 | 5000 | 12 |    |
|                                      | 13 |        |      |      |      |      | 9999 | 9991 | 9940 | 9836 | 9222 | 6550 | 11 |    |
|                                      | 14 |        |      |      |      |      |      | 9998 | 9982 | 9944 | 9656 | 7878 | 10 |    |
|                                      | 15 |        |      |      |      |      |      |      | 9995 | 9984 | 9868 | 8852 | 9  |    |
|                                      | 16 |        |      |      |      |      |      |      | 9999 | 9996 | 9957 | 9461 | 8  |    |
|                                      | 17 |        |      |      |      |      |      |      |      | 9999 | 9988 | 9784 | 7  |    |
|                                      | 18 |        |      |      |      |      |      |      |      |      | 9997 | 9927 | 6  |    |
|                                      | 19 |        |      |      |      |      |      |      |      |      | 9999 | 9980 | 5  |    |
|                                      | 20 |        |      |      |      |      |      |      |      |      |      | 9995 | 4  |    |
| 21                                   |    |        |      |      |      |      |      |      |      |      | 9999 | 3    |    |    |
| 50                                   | 0  | 0,3642 | 2181 | 0769 | 0052 | 0001 | 0000 | 0000 | 0000 | 0000 | 0000 | 0000 | 49 | 50 |
|                                      | 1  | 7358   | 5553 | 2794 | 0338 | 0012 | 0002 | 0000 | 0000 | 0000 | 0000 | 0000 | 48 |    |
|                                      | 2  | 9216   | 8108 | 5405 | 1117 | 0066 | 0013 | 0001 | 0000 | 0000 | 0000 | 0000 | 47 |    |
|                                      | 3  | 9822   | 9372 | 7604 | 2503 | 0238 | 0057 | 0005 | 0000 | 0000 | 0000 | 0000 | 46 |    |
|                                      | 4  | 9968   | 9832 | 8964 | 4312 | 0643 | 0185 | 0021 | 0002 | 0000 | 0000 | 0000 | 45 |    |
|                                      | 5  | 9995   | 9963 | 9622 | 6161 | 1388 | 0480 | 0070 | 0007 | 0001 | 0000 | 0000 | 44 |    |
|                                      | 6  | 9999   | 9993 | 9882 | 7702 | 2506 | 1034 | 0194 | 0025 | 0005 | 0000 | 0000 | 43 |    |
|                                      | 7  |        | 9999 | 9968 | 8779 | 3911 | 1904 | 0453 | 0073 | 0017 | 0001 | 0000 | 42 |    |
|                                      | 8  |        |      | 9992 | 9421 | 5421 | 3073 | 0916 | 0183 | 0050 | 0002 | 0000 | 41 |    |
|                                      | 9  |        |      | 9998 | 9755 | 6830 | 4437 | 1637 | 0402 | 0127 | 0008 | 0000 | 40 |    |
|                                      | 10 |        |      |      | 9906 | 7986 | 5836 | 2622 | 0789 | 0284 | 0022 | 0000 | 39 |    |
|                                      | 11 |        |      |      | 9968 | 8827 | 7107 | 3816 | 1390 | 0570 | 0057 | 0000 | 38 |    |
|                                      | 12 |        |      |      | 9990 | 9373 | 8139 | 5110 | 2229 | 1035 | 0133 | 0002 | 37 |    |
|                                      | 13 |        |      |      | 9997 | 9693 | 8894 | 6370 | 3279 | 1715 | 0280 | 0005 | 36 |    |
|                                      | 14 |        |      |      | 9999 | 9862 | 9393 | 7481 | 4468 | 2612 | 0540 | 0013 | 35 |    |
|                                      | 15 |        |      |      |      | 9943 | 9692 | 8369 | 5692 | 3690 | 0955 | 0033 | 34 |    |
|                                      | 16 |        |      |      |      | 9978 | 9856 | 9017 | 6839 | 4868 | 1561 | 0077 | 33 |    |
|                                      | 17 |        |      |      |      | 9992 | 9937 | 9449 | 7822 | 6046 | 2369 | 0164 | 32 |    |
|                                      | 18 |        |      |      |      | 9997 | 9975 | 9713 | 8594 | 7126 | 3356 | 0325 | 31 |    |
|                                      | 19 |        |      |      |      | 9999 | 9991 | 9861 | 9152 | 8036 | 4465 | 0595 | 30 |    |
|                                      | 20 |        |      |      |      |      | 9997 | 9937 | 9522 | 8741 | 5610 | 1013 | 29 |    |
|                                      | 21 |        |      |      |      |      | 9999 | 9974 | 9749 | 9244 | 6701 | 1611 | 28 |    |
|                                      | 22 |        |      |      |      |      |      | 9990 | 9877 | 9576 | 7660 | 2399 | 27 |    |
|                                      | 23 |        |      |      |      |      |      | 9996 | 9944 | 9778 | 8438 | 3359 | 26 |    |
|                                      | 24 |        |      |      |      |      |      | 9999 | 9976 | 9892 | 9022 | 4439 | 25 |    |
|                                      | 25 |        |      |      |      |      |      |      | 9991 | 9951 | 9427 | 5561 | 24 |    |
|                                      | 26 |        |      |      |      |      |      |      | 9997 | 9979 | 9686 | 6641 | 23 |    |
|                                      | 27 |        |      |      |      |      |      |      | 9999 | 9992 | 9840 | 7601 | 22 |    |
|                                      | 28 |        |      |      |      |      |      |      |      | 9997 | 9924 | 8389 | 21 |    |
|                                      | 29 |        |      |      |      |      |      |      |      | 9999 | 9966 | 8987 | 20 |    |
|                                      | 30 |        |      |      |      |      |      |      |      |      | 9986 | 9405 | 19 |    |
|                                      | 31 |        |      |      |      |      |      |      |      |      | 9995 | 9675 | 18 |    |
|                                      | 32 |        |      |      |      |      |      |      |      |      | 9998 | 9836 | 17 |    |
|                                      | 33 |        |      |      |      |      |      |      |      |      | 9999 | 9923 | 16 |    |
|                                      | 34 |        |      |      |      |      |      |      |      |      |      | 9967 | 15 |    |
|                                      | 35 |        |      |      |      |      |      |      |      |      |      | 9987 | 14 |    |
|                                      | 36 |        |      |      |      |      |      |      |      |      |      | 9995 | 13 |    |
| 37                                   |    |        |      |      |      |      |      |      |      |      | 9998 | 12   |    |    |
| Nicht aufgeführte Werte sind 1,0000. |    |        |      |      |      |      |      |      |      |      |      |      |    |    |
| n                                    | k  | 0,98   | 0,97 | 0,95 | 0,90 | 5/6  | 0,80 | 0,75 | 0,70 | 2/3  | 0,60 | 0,50 | k  | n  |

Bei grau unterlegtem Eingang, d.h.  $p \geq \frac{1}{2}$ , gilt:  $P(X \leq k) = 1 - \text{abgelesener Wert}$ .

$$P_{n;p}(X \leq k) = \sum_{i=0}^k \binom{n}{i} \cdot p^i \cdot (1-p)^{n-i}$$

| <i>n</i> | <i>k</i> | 0,02                                 | 0,03 | 0,05 | 0,10 | 1/6  | 0,20 | 0,25 | 0,30 | 1/3  | 0,40 | 0,50 |          | <i>n</i> |    |
|----------|----------|--------------------------------------|------|------|------|------|------|------|------|------|------|------|----------|----------|----|
| 100      | 0        | 0,                                   | 1326 | 0476 | 0059 | 0000 | 0000 | 0000 | 0000 | 0000 | 0000 | 0000 | 99       | 100      |    |
|          | 1        |                                      | 4033 | 1946 | 0371 | 0003 | 0000 | 0000 | 0000 | 0000 | 0000 | 0000 | 98       |          |    |
|          | 2        |                                      | 6767 | 4198 | 1183 | 0019 | 0000 | 0000 | 0000 | 0000 | 0000 | 0000 | 97       |          |    |
|          | 3        |                                      | 8590 | 6472 | 2578 | 0078 | 0000 | 0000 | 0000 | 0000 | 0000 | 0000 | 96       |          |    |
|          | 4        |                                      | 9492 | 8179 | 4360 | 0237 | 0001 | 0000 | 0000 | 0000 | 0000 | 0000 | 95       |          |    |
|          | 5        |                                      | 9845 | 9192 | 6160 | 0576 | 0004 | 0000 | 0000 | 0000 | 0000 | 0000 | 94       |          |    |
|          | 6        |                                      | 9959 | 9688 | 7660 | 1172 | 0013 | 0001 | 0000 | 0000 | 0000 | 0000 | 93       |          |    |
|          | 7        |                                      | 9991 | 9894 | 8720 | 2061 | 0038 | 0003 | 0000 | 0000 | 0000 | 0000 | 92       |          |    |
|          | 8        |                                      | 9998 | 9968 | 9369 | 3209 | 0095 | 0009 | 0000 | 0000 | 0000 | 0000 | 91       |          |    |
|          | 9        |                                      |      | 9991 | 9718 | 4513 | 0213 | 0023 | 0000 | 0000 | 0000 | 0000 | 90       |          |    |
|          | 10       |                                      |      | 9998 | 9885 | 5832 | 0427 | 0057 | 0001 | 0000 | 0000 | 0000 | 89       |          |    |
|          | 11       |                                      |      |      | 9957 | 7030 | 0777 | 0126 | 0004 | 0000 | 0000 | 0000 | 88       |          |    |
|          | 12       |                                      |      |      | 9985 | 8018 | 1297 | 0253 | 0010 | 0000 | 0000 | 0000 | 87       |          |    |
|          | 13       |                                      |      |      | 9995 | 8761 | 2000 | 0469 | 0025 | 0001 | 0000 | 0000 | 86       |          |    |
|          | 14       |                                      |      |      | 9999 | 9274 | 2874 | 0804 | 0054 | 0002 | 0000 | 0000 | 85       |          |    |
|          | 15       |                                      |      |      |      | 9601 | 3877 | 1285 | 0111 | 0004 | 0000 | 0000 | 84       |          |    |
|          | 16       |                                      |      |      |      | 9794 | 4942 | 1923 | 0211 | 0010 | 0001 | 0000 | 83       |          |    |
|          | 17       |                                      |      |      |      | 9900 | 5994 | 2712 | 0376 | 0022 | 0002 | 0000 | 82       |          |    |
|          | 18       |                                      |      |      |      | 9954 | 6965 | 3621 | 0630 | 0045 | 0005 | 0000 | 81       |          |    |
|          | 19       |                                      |      |      |      | 9980 | 7803 | 4602 | 0995 | 0089 | 0011 | 0000 | 80       |          |    |
|          | 20       |                                      |      |      |      | 9992 | 8481 | 5595 | 1488 | 0165 | 0024 | 0000 | 79       |          |    |
|          | 21       |                                      |      |      |      | 9997 | 8998 | 6540 | 2114 | 0288 | 0048 | 0000 | 78       |          |    |
|          | 22       |                                      |      |      |      | 9999 | 9369 | 7389 | 2864 | 0479 | 0091 | 0001 | 77       |          |    |
|          | 23       |                                      |      |      |      |      | 9621 | 8109 | 3711 | 0755 | 0164 | 0003 | 76       |          |    |
|          | 24       |                                      |      |      |      |      | 9783 | 8686 | 4617 | 1136 | 0281 | 0006 | 75       |          |    |
|          | 25       |                                      |      |      |      |      | 9881 | 9125 | 5535 | 1631 | 0458 | 0012 | 74       |          |    |
|          | 26       |                                      |      |      |      |      | 9938 | 9442 | 6417 | 2244 | 0715 | 0024 | 73       |          |    |
|          | 27       |                                      |      |      |      |      | 9969 | 9658 | 7224 | 2964 | 1066 | 0046 | 72       |          |    |
|          | 28       |                                      |      |      |      |      | 9985 | 9800 | 7925 | 3768 | 1524 | 0084 | 71       |          |    |
|          | 29       |                                      |      |      |      |      | 9993 | 9888 | 8505 | 4623 | 2093 | 0148 | 70       |          |    |
|          | 30       |                                      |      |      |      |      | 9997 | 9939 | 8962 | 5491 | 2766 | 0248 | 69       |          |    |
|          | 31       |                                      |      |      |      |      | 9999 | 9969 | 9307 | 6331 | 3525 | 0398 | 68       |          |    |
|          | 32       |                                      |      |      |      |      |      | 9984 | 9554 | 7107 | 4344 | 0615 | 67       |          |    |
|          | 33       |                                      |      |      |      |      |      | 9993 | 9724 | 7793 | 5188 | 0913 | 66       |          |    |
|          | 34       |                                      |      |      |      |      |      | 9997 | 9836 | 8371 | 6019 | 1303 | 65       |          |    |
|          | 35       |                                      |      |      |      |      |      | 9999 | 9906 | 8839 | 6803 | 1795 | 64       |          |    |
|          | 36       |                                      |      |      |      |      |      | 9999 | 9948 | 9201 | 7511 | 2386 | 0033     |          | 63 |
|          | 37       |                                      |      |      |      |      |      |      | 9973 | 9470 | 8123 | 3068 | 0060     |          | 62 |
|          | 38       |                                      |      |      |      |      |      |      | 9986 | 9660 | 8630 | 3822 | 0105     |          | 61 |
|          | 39       |                                      |      |      |      |      |      |      | 9993 | 9790 | 9034 | 4621 | 0176     |          | 60 |
|          | 40       |                                      |      |      |      |      |      |      | 9997 | 9875 | 9341 | 5433 | 0284     |          | 59 |
|          | 41       |                                      |      |      |      |      |      |      | 9999 | 9928 | 9566 | 6225 | 0443     |          | 58 |
|          | 42       |                                      |      |      |      |      |      |      | 9999 | 9960 | 9724 | 6967 | 0666     |          | 57 |
|          | 43       |                                      |      |      |      |      |      |      |      | 9979 | 9831 | 7635 | 0967     |          | 56 |
|          | 44       |                                      |      |      |      |      |      |      |      | 9989 | 9900 | 8211 | 1356     |          | 55 |
|          | 45       |                                      |      |      |      |      |      |      |      | 9995 | 9943 | 8689 | 1841     |          | 54 |
|          | 46       |                                      |      |      |      |      |      |      |      | 9997 | 9969 | 9070 | 2421     |          | 53 |
|          | 47       |                                      |      |      |      |      |      |      |      | 9999 | 9983 | 9362 | 3086     |          | 52 |
|          | 48       |                                      |      |      |      |      |      |      |      | 9999 | 9991 | 9577 | 3822     |          | 51 |
|          | 49       |                                      |      |      |      |      |      |      |      |      | 9996 | 9729 | 4602     |          | 50 |
|          | 50       |                                      |      |      |      |      |      |      |      |      | 9998 | 9832 | 5398     |          | 49 |
|          | 51       |                                      |      |      |      |      |      |      |      |      | 9999 | 9900 | 6178     |          | 48 |
|          | 52       |                                      |      |      |      |      |      |      |      |      |      | 9942 | 6914     |          | 47 |
|          | 53       |                                      |      |      |      |      |      |      |      |      |      | 9968 | 7579     |          | 46 |
|          | 54       |                                      |      |      |      |      |      |      |      |      |      | 9983 | 8159     |          | 45 |
|          | 55       |                                      |      |      |      |      |      |      |      |      |      | 9991 | 8644     |          | 44 |
|          | 56       |                                      |      |      |      |      |      |      |      |      |      | 9996 | 9033     |          | 43 |
|          | 57       |                                      |      |      |      |      |      |      |      |      |      | 9998 | 9334     |          | 42 |
|          | 58       |                                      |      |      |      |      |      |      |      |      |      | 9999 | 9557     |          | 41 |
|          | 59       |                                      |      |      |      |      |      |      |      |      |      |      | 9716     |          | 40 |
|          | 60       |                                      |      |      |      |      |      |      |      |      |      |      | 9824     |          | 39 |
|          | 61       |                                      |      |      |      |      |      |      |      |      |      |      | 9895     |          | 38 |
|          | 62       |                                      |      |      |      |      |      |      |      |      |      |      | 9940     |          | 37 |
|          | 63       |                                      |      |      |      |      |      |      |      |      |      |      | 9967     |          | 36 |
|          | 64       |                                      |      |      |      |      |      |      |      |      |      |      | 9982     |          | 35 |
|          | 65       |                                      |      |      |      |      |      |      |      |      |      |      | 9991     |          | 34 |
|          | 66       |                                      |      |      |      |      |      |      |      |      |      |      | 9996     |          | 33 |
|          | 67       |                                      |      |      |      |      |      |      |      |      |      |      | 9998     |          | 32 |
| 68       |          |                                      |      |      |      |      |      |      |      |      |      | 9999 | 31       |          |    |
|          |          | Nicht aufgeführte Werte sind 1,0000. |      |      |      |      |      |      |      |      |      |      |          |          |    |
| <i>n</i> |          | 0,98                                 | 0,97 | 0,95 | 0,90 | 5/6  | 0,80 | 0,75 | 0,70 | 2/3  | 0,60 | 0,50 | <i>k</i> | <i>n</i> |    |

Nicht aufgeführte Werte sind 1,0000.

Bei grau unterlegtem Eingang, d.h.  $p \geq \frac{1}{2}$ , gilt:  $P(X \leq k) = 1 - \text{abgelesener Wert}$ .