APPENDIX

# B Present Value Tables

**TABLE 1** Present Value of $1 to Be Received at the End of a Given Number of Time Periods

| Periods | 1% | 2% | 3% | 4% | 5% | 6% | 7% | 8% | 9% | 10% | 12% |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 0.990 | 0.980 | 0.971 | 0.962 | 0.952 | 0.943 | 0.935 | 0.926 | 0.917 | 0.909 | 0.893 |
| 2 | 0.980 | 0.961 | 0.943 | 0.925 | 0.907 | 0.890 | 0.873 | 0.857 | 0.842 | 0.826 | 0.797 |
| 3 | 0.971 | 0.942 | 0.915 | 0.889 | 0.864 | 0.840 | 0.816 | 0.794 | 0.772 | 0.751 | 0.712 |
| 4 | 0.961 | 0.924 | 0.888 | 0.855 | 0.823 | 0.792 | 0.763 | 0.735 | 0.708 | 0.683 | 0.636 |
| 5 | 0.951 | 0.906 | 0.883 | 0.822 | 0.784 | 0.747 | 0.713 | 0.681 | 0.650 | 0.621 | 0.567 |
| 6 | 0.942 | 0.888 | 0.837 | 0.790 | 0.746 | 0.705 | 0.666 | 0.630 | 0.596 | 0.564 | 0.507 |
| 7 | 0.932 | 0.871 | 0.813 | 0.760 | 0.711 | 0.665 | 0.623 | 0.583 | 0.547 | 0.513 | 0.452 |
| 8 | 0.923 | 0.853 | 0.789 | 0.731 | 0.677 | 0.627 | 0.582 | 0.540 | 0.502 | 0.467 | 0.404 |
| 9 | 0.914 | 0.837 | 0.766 | 0.703 | 0.645 | 0.592 | 0.544 | 0.500 | 0.460 | 0.424 | 0.361 |
| 10 | 0.905 | 0.820 | 0.744 | 0.676 | 0.614 | 0.558 | 0.508 | 0.463 | 0.422 | 0.386 | 0.322 |
| 11 | 0.896 | 0.804 | 0.722 | 0.650 | 0.585 | 0.527 | 0.475 | 0.429 | 0.388 | 0.350 | 0.287 |
| 12 | 0.887 | 0.788 | 0.701 | 0.625 | 0.557 | 0.497 | 0.444 | 0.397 | 0.356 | 0.319 | 0.257 |
| 13 | 0.879 | 0.773 | 0.681 | 0.601 | 0.530 | 0.469 | 0.415 | 0.368 | 0.326 | 0.290 | 0.229 |
| 14 | 0.870 | 0.758 | 0.661 | 0.577 | 0.505 | 0.442 | 0.388 | 0.340 | 0.299 | 0.263 | 0.205 |
| 15 | 0.861 | 0.743 | 0.642 | 0.555 | 0.481 | 0.417 | 0.362 | 0.315 | 0.275 | 0.239 | 0.183 |
| 16 | 0.853 | 0.728 | 0.623 | 0.534 | 0.458 | 0.394 | 0.339 | 0.292 | 0.252 | 0.218 | 0.163 |
| 17 | 0.844 | 0.714 | 0.605 | 0.513 | 0.436 | 0.371 | 0.317 | 0.270 | 0.231 | 0.198 | 0.146 |
| 18 | 0.836 | 0.700 | 0.587 | 0.494 | 0.416 | 0.350 | 0.296 | 0.250 | 0.212 | 0.180 | 0.130 |
| 19 | 0.828 | 0.686 | 0.570 | 0.475 | 0.396 | 0.331 | 0.277 | 0.232 | 0.194 | 0.164 | 0.116 |
| 20 | 0.820 | 0.673 | 0.554 | 0.456 | 0.377 | 0.312 | 0.258 | 0.215 | 0.178 | 0.149 | 0.104 |
| 21 | 0.811 | 0.660 | 0.538 | 0.439 | 0.359 | 0.294 | 0.242 | 0.199 | 0.164 | 0.135 | 0.093 |
| 22 | 0.803 | 0.647 | 0.522 | 0.422 | 0.342 | 0.278 | 0.226 | 0.184 | 0.150 | 0.123 | 0.083 |
| 23 | 0.795 | 0.634 | 0.507 | 0.406 | 0.326 | 0.262 | 0.211 | 0.170 | 0.138 | 0.112 | 0.074 |
| 24 | 0.788 | 0.622 | 0.492 | 0.390 | 0.310 | 0.247 | 0.197 | 0.158 | 0.126 | 0.102 | 0.066 |
| 25 | 0.780 | 0.610 | 0.478 | 0.375 | 0.295 | 0.233 | 0.184 | 0.146 | 0.116 | 0.092 | 0.059 |
| 26 | 0.772 | 0.598 | 0.464 | 0.361 | 0.281 | 0.220 | 0.172 | 0.135 | 0.106 | 0.084 | 0.053 |
| 27 | 0.764 | 0.586 | 0.450 | 0.347 | 0.268 | 0.207 | 0.161 | 0.125 | 0.098 | 0.076 | 0.047 |
| 28 | 0.757 | 0.574 | 0.437 | 0.333 | 0.255 | 0.196 | 0.150 | 0.116 | 0.090 | 0.069 | 0.042 |
| 29 | 0.749 | 0.563 | 0.424 | 0.321 | 0.243 | 0.185 | 0.141 | 0.107 | 0.082 | 0.063 | 0.037 |
| 30 | 0.742 | 0.552 | 0.412 | 0.308 | 0.231 | 0.174 | 0.131 | 0.099 | 0.075 | 0.057 | 0.033 |
| 40 | 0.672 | 0.453 | 0.307 | 0.208 | 0.142 | 0.097 | 0.067 | 0.046 | 0.032 | 0.022 | 0.011 |
| 50 | 0.608 | 0.372 | 0.228 | 0.141 | 0.087 | 0.054 | 0.034 | 0.021 | 0.013 | 0.009 | 0.003 |

Table 1 is used to compute the value today of a single amount of cash to be received sometime in the future. To use Table 1, you must first know (1) the time period in years until funds will be received, (2) the stated annual rate of interest, and (3) the dollar amount to be received at the end of the time period.

**Example—Table 1.** What is the present value of $30,000 to be received 25 years from now, assuming a 14 percent interest rate? From Table 1, the required multiplier is 0.038, and the answer is:

$$\$30{,}000 \times 0.038 = \$1{,}140$$

The factor values for Table 1 are:

$$\text{PV Factor} = (1 + r)^{-n}$$

| 14% | 15% | 16% | 18% | 20% | 25% | 30% | 35% | 40% | 45% | 50% | Periods |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 0.877 | 0.870 | 0.862 | 0.847 | 0.833 | 0.800 | 0.769 | 0.741 | 0.714 | 0.690 | 0.667 | 1 |
| 0.769 | 0.756 | 0.743 | 0.718 | 0.694 | 0.640 | 0.592 | 0.549 | 0.510 | 0.476 | 0.444 | 2 |
| 0.675 | 0.658 | 0.641 | 0.609 | 0.579 | 0.512 | 0.455 | 0.406 | 0.364 | 0.328 | 0.296 | 3 |
| 0.592 | 0.572 | 0.552 | 0.516 | 0.482 | 0.410 | 0.350 | 0.301 | 0.260 | 0.226 | 0.198 | 4 |
| 0.519 | 0.497 | 0.476 | 0.437 | 0.402 | 0.328 | 0.269 | 0.223 | 0.186 | 0.156 | 0.132 | 5 |
| 0.456 | 0.432 | 0.410 | 0.370 | 0.335 | 0.262 | 0.207 | 0.165 | 0.133 | 0.108 | 0.088 | 6 |
| 0.400 | 0.376 | 0.354 | 0.314 | 0.279 | 0.210 | 0.159 | 0.122 | 0.095 | 0.074 | 0.059 | 7 |
| 0.351 | 0.327 | 0.305 | 0.266 | 0.233 | 0.168 | 0.123 | 0.091 | 0.068 | 0.051 | 0.039 | 8 |
| 0.308 | 0.284 | 0.263 | 0.225 | 0.194 | 0.134 | 0.094 | 0.067 | 0.048 | 0.035 | 0.026 | 9 |
| 0.270 | 0.247 | 0.227 | 0.191 | 0.162 | 0.107 | 0.073 | 0.050 | 0.035 | 0.024 | 0.017 | 10 |
| 0.237 | 0.215 | 0.195 | 0.162 | 0.135 | 0.086 | 0.056 | 0.037 | 0.025 | 0.017 | 0.012 | 11 |
| 0.208 | 0.187 | 0.168 | 0.137 | 0.112 | 0.069 | 0.043 | 0.027 | 0.018 | 0.012 | 0.008 | 12 |
| 0.182 | 0.163 | 0.145 | 0.116 | 0.093 | 0.055 | 0.033 | 0.020 | 0.013 | 0.008 | 0.005 | 13 |
| 0.160 | 0.141 | 0.125 | 0.099 | 0.078 | 0.044 | 0.025 | 0.015 | 0.009 | 0.006 | 0.003 | 14 |
| 0.140 | 0.123 | 0.108 | 0.084 | 0.065 | 0.035 | 0.020 | 0.011 | 0.006 | 0.004 | 0.002 | 15 |
| 0.123 | 0.107 | 0.093 | 0.071 | 0.054 | 0.028 | 0.015 | 0.008 | 0.005 | 0.003 | 0.002 | 16 |
| 0.108 | 0.093 | 0.080 | 0.060 | 0.045 | 0.023 | 0.012 | 0.006 | 0.003 | 0.002 | 0.001 | 17 |
| 0.095 | 0.081 | 0.069 | 0.051 | 0.038 | 0.018 | 0.009 | 0.005 | 0.002 | 0.001 | 0.001 | 18 |
| 0.083 | 0.070 | 0.060 | 0.043 | 0.031 | 0.014 | 0.007 | 0.003 | 0.002 | 0.001 | | 19 |
| 0.073 | 0.061 | 0.051 | 0.037 | 0.026 | 0.012 | 0.005 | 0.002 | 0.001 | 0.001 | | 20 |
| 0.064 | 0.053 | 0.044 | 0.031 | 0.022 | 0.009 | 0.004 | 0.002 | 0.001 | | | 21 |
| 0.056 | 0.046 | 0.038 | 0.026 | 0.018 | 0.007 | 0.003 | 0.001 | 0.001 | | | 22 |
| 0.049 | 0.040 | 0.033 | 0.022 | 0.015 | 0.006 | 0.002 | 0.001 | | | | 23 |
| 0.043 | 0.035 | 0.028 | 0.019 | 0.013 | 0.005 | 0.002 | 0.001 | | | | 24 |
| 0.038 | 0.030 | 0.024 | 0.016 | 0.010 | 0.004 | 0.001 | 0.001 | | | | 25 |
| 0.033 | 0.026 | 0.021 | 0.014 | 0.009 | 0.003 | 0.001 | | | | | 26 |
| 0.029 | 0.023 | 0.018 | 0.011 | 0.007 | 0.002 | 0.001 | | | | | 27 |
| 0.026 | 0.020 | 0.016 | 0.010 | 0.006 | 0.002 | 0.001 | | | | | 28 |
| 0.022 | 0.017 | 0.014 | 0.008 | 0.005 | 0.002 | | | | | | 29 |
| 0.020 | 0.015 | 0.012 | 0.007 | 0.004 | 0.001 | | | | | | 30 |
| 0.005 | 0.004 | 0.003 | 0.001 | 0.001 | | | | | | | 40 |
| 0.001 | 0.001 | 0.001 | | | | | | | | | 50 |

**TABLE 2** Present Value of $1 Received Each Period for a Given Number of Time Periods

| Periods | 1% | 2% | 3% | 4% | 5% | 6% | 7% | 8% | 9% | 10% | 12% |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 0.990 | 0.980 | 0.971 | 0.962 | 0.952 | 0.943 | 0.935 | 0.926 | 0.917 | 0.909 | 0.893 |
| 2 | 1.970 | 1.942 | 1.913 | 1.886 | 1.859 | 1.833 | 1.808 | 1.783 | 1.759 | 1.736 | 1.690 |
| 3 | 2.941 | 2.884 | 2.829 | 2.775 | 2.723 | 2.673 | 2.624 | 2.577 | 2.531 | 2.487 | 2.402 |
| 4 | 3.902 | 3.808 | 3.717 | 3.630 | 3.546 | 3.465 | 3.387 | 3.312 | 3.240 | 3.170 | 3.037 |
| 5 | 4.853 | 4.713 | 4.580 | 4.452 | 4.329 | 4.212 | 4.100 | 3.993 | 3.890 | 3.791 | 3.605 |
| 6 | 5.795 | 5.601 | 5.417 | 5.242 | 5.076 | 4.917 | 4.767 | 4.623 | 4.486 | 4.355 | 4.111 |
| 7 | 6.728 | 6.472 | 6.230 | 6.002 | 5.786 | 5.582 | 5.389 | 5.206 | 5.033 | 4.868 | 4.564 |
| 8 | 7.652 | 7.325 | 7.020 | 6.733 | 6.463 | 6.210 | 5.971 | 5.747 | 5.535 | 5.335 | 4.968 |
| 9 | 8.566 | 8.162 | 7.786 | 7.435 | 7.108 | 6.802 | 6.515 | 6.247 | 5.995 | 5.759 | 5.328 |
| 10 | 9.471 | 8.983 | 8.530 | 8.111 | 7.722 | 7.360 | 7.024 | 6.710 | 6.418 | 6.145 | 5.650 |
| 11 | 10.368 | 9.787 | 9.253 | 8.760 | 8.306 | 7.887 | 7.499 | 7.139 | 6.805 | 6.495 | 5.938 |
| 12 | 11.255 | 10.575 | 9.954 | 9.385 | 8.863 | 8.384 | 7.943 | 7.536 | 7.161 | 6.814 | 6.194 |
| 13 | 12.134 | 11.348 | 10.635 | 9.986 | 9.394 | 8.853 | 8.358 | 7.904 | 7.487 | 7.103 | 6.424 |
| 14 | 13.004 | 12.106 | 11.296 | 10.563 | 9.899 | 9.295 | 8.745 | 8.244 | 7.786 | 7.367 | 6.628 |
| 15 | 13.865 | 12.849 | 11.938 | 11.118 | 10.380 | 9.712 | 9.108 | 8.559 | 8.061 | 7.606 | 6.811 |
| 16 | 14.718 | 13.578 | 12.561 | 11.652 | 10.838 | 10.106 | 9.447 | 8.851 | 8.313 | 7.824 | 6.974 |
| 17 | 15.562 | 14.292 | 13.166 | 12.166 | 11.274 | 10.477 | 9.763 | 9.122 | 8.544 | 8.022 | 7.120 |
| 18 | 16.398 | 14.992 | 13.754 | 12.659 | 11.690 | 10.828 | 10.059 | 9.372 | 8.756 | 8.201 | 7.250 |
| 19 | 17.226 | 15.678 | 14.324 | 13.134 | 12.085 | 11.158 | 10.336 | 9.604 | 8.950 | 8.365 | 7.366 |
| 20 | 18.046 | 16.351 | 14.878 | 13.590 | 12.462 | 11.470 | 10.594 | 9.818 | 9.129 | 8.514 | 7.469 |
| 21 | 18.857 | 17.011 | 15.415 | 14.029 | 12.821 | 11.764 | 10.836 | 10.017 | 9.292 | 8.649 | 7.562 |
| 22 | 19.660 | 17.658 | 15.937 | 14.451 | 13.163 | 12.042 | 11.061 | 10.201 | 9.442 | 8.772 | 7.645 |
| 23 | 20.456 | 18.292 | 16.444 | 14.857 | 13.489 | 12.303 | 11.272 | 10.371 | 9.580 | 8.883 | 7.718 |
| 24 | 21.243 | 18.914 | 16.936 | 15.247 | 13.799 | 12.550 | 11.469 | 10.529 | 9.707 | 8.985 | 7.784 |
| 25 | 22.023 | 19.523 | 17.413 | 15.622 | 14.094 | 12.783 | 11.654 | 10.675 | 9.823 | 9.077 | 7.843 |
| 26 | 22.795 | 20.121 | 17.877 | 15.983 | 14.375 | 13.003 | 11.826 | 10.810 | 9.929 | 9.161 | 7.896 |
| 27 | 23.560 | 20.707 | 18.327 | 16.330 | 14.643 | 13.211 | 11.987 | 10.935 | 10.027 | 9.237 | 7.943 |
| 28 | 24.316 | 21.281 | 18.764 | 16.663 | 14.898 | 13.406 | 12.137 | 11.051 | 10.116 | 9.307 | 7.984 |
| 29 | 25.066 | 21.844 | 19.189 | 16.984 | 15.141 | 13.591 | 12.278 | 11.158 | 10.198 | 9.370 | 8.022 |
| 30 | 25.808 | 22.396 | 19.600 | 17.292 | 15.373 | 13.765 | 12.409 | 11.258 | 10.274 | 9.427 | 8.055 |
| 40 | 32.835 | 27.355 | 23.115 | 19.793 | 17.159 | 15.046 | 13.332 | 11.925 | 10.757 | 9.779 | 8.244 |
| 50 | 39.196 | 31.424 | 25.730 | 21.482 | 18.256 | 15.762 | 13.801 | 12.234 | 10.962 | 9.915 | 8.305 |

Table 2 is used to compute the present value of a *series* of *equal* annual cash flows.

**Example—Table 2.** Arthur Howard won a contest on January 1, 2010, in which the prize was $30,000, payable in 15 annual installments of $2,000 each December 31, beginning in 2010. Assuming a 9 percent interest rate, what is the present value of Howard's prize on January 1, 2010? From Table 2, the required multiplier is 8.061, and the answer is:

$$\$2{,}000 \times 8.061 = \$16{,}122$$

The factor values for Table 2 are:

$$\text{PVa Factor} = \frac{1 - (1 + r)^{-n}}{r}$$

| 14% | 15% | 16% | 18% | 20% | 25% | 30% | 35% | 40% | 45% | 50% | Periods |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 0.877 | 0.870 | 0.862 | 0.847 | 0.833 | 0.800 | 0.769 | 0.741 | 0.714 | 0.690 | 0.667 | 1 |
| 1.647 | 1.626 | 1.605 | 1.566 | 1.528 | 1.440 | 1.361 | 1.289 | 1.224 | 1.165 | 1.111 | 2 |
| 2.322 | 2.283 | 2.246 | 2.174 | 2.106 | 1.952 | 1.816 | 1.696 | 1.589 | 1.493 | 1.407 | 3 |
| 2.914 | 2.855 | 2.798 | 2.690 | 2.589 | 2.362 | 2.166 | 1.997 | 1.849 | 1.720 | 1.605 | 4 |
| 3.433 | 3.352 | 3.274 | 3.127 | 2.991 | 2.689 | 2.436 | 2.220 | 2.035 | 1.876 | 1.737 | 5 |
| 3.889 | 3.784 | 3.685 | 3.498 | 3.326 | 2.951 | 2.643 | 2.385 | 2.168 | 1.983 | 1.824 | 6 |
| 4.288 | 4.160 | 4.039 | 3.812 | 3.605 | 3.161 | 2.802 | 2.508 | 2.263 | 2.057 | 1.883 | 7 |
| 4.639 | 4.487 | 4.344 | 4.078 | 3.837 | 3.329 | 2.925 | 2.598 | 2.331 | 2.109 | 1.922 | 8 |
| 4.946 | 4.772 | 4.607 | 4.303 | 4.031 | 3.463 | 3.019 | 2.665 | 2.379 | 2.144 | 1.948 | 9 |
| 5.216 | 5.019 | 4.833 | 4.494 | 4.192 | 3.571 | 3.092 | 2.715 | 2.414 | 2.168 | 1.965 | 10 |
| 5.453 | 5.234 | 5.029 | 4.656 | 4.327 | 3.656 | 3.147 | 2.752 | 2.438 | 2.185 | 1.977 | 11 |
| 5.660 | 5.421 | 5.197 | 4.793 | 4.439 | 3.725 | 3.190 | 2.779 | 2.456 | 2.197 | 1.985 | 12 |
| 5.842 | 5.583 | 5.342 | 4.910 | 4.533 | 3.780 | 3.223 | 2.799 | 2.469 | 2.204 | 1.990 | 13 |
| 6.002 | 5.724 | 5.468 | 5.008 | 4.611 | 3.824 | 3.249 | 2.814 | 2.478 | 2.210 | 1.993 | 14 |
| 6.142 | 5.847 | 5.575 | 5.092 | 4.675 | 3.859 | 3.268 | 2.825 | 2.484 | 2.214 | 1.995 | 15 |
| 6.265 | 5.954 | 5.669 | 5.162 | 4.730 | 3.887 | 3.283 | 2.834 | 2.489 | 2.216 | 1.997 | 16 |
| 6.373 | 6.047 | 5.749 | 5.222 | 4.775 | 3.910 | 3.295 | 2.840 | 2.492 | 2.218 | 1.998 | 17 |
| 6.467 | 6.128 | 5.818 | 5.273 | 4.812 | 3.928 | 3.304 | 2.844 | 2.494 | 2.219 | 1.999 | 18 |
| 6.550 | 6.198 | 5.877 | 5.316 | 4.844 | 3.942 | 3.311 | 2.848 | 2.496 | 2.220 | 1.999 | 19 |
| 6.623 | 6.259 | 5.929 | 5.353 | 4.870 | 3.954 | 3.316 | 2.850 | 2.497 | 2.221 | 1.999 | 20 |
| 6.687 | 6.312 | 5.973 | 5.384 | 4.891 | 3.963 | 3.320 | 2.852 | 2.498 | 2.221 | 2.000 | 21 |
| 6.743 | 6.359 | 6.011 | 5.410 | 4.909 | 3.970 | 3.323 | 2.853 | 2.498 | 2.222 | 2.000 | 22 |
| 6.792 | 6.399 | 6.044 | 5.432 | 4.925 | 3.976 | 3.325 | 2.854 | 2.499 | 2.222 | 2.000 | 23 |
| 6.835 | 6.434 | 6.073 | 5.451 | 4.973 | 3.981 | 3.327 | 2.855 | 2.499 | 2.222 | 2.000 | 24 |
| 6.873 | 6.464 | 6.097 | 5.467 | 4.948 | 3.985 | 3.329 | 2.856 | 2.499 | 2.222 | 2.000 | 25 |
| 6.906 | 6.491 | 6.118 | 5.480 | 4.956 | 3.988 | 3.330 | 2.856 | 2.500 | 2.222 | 2.000 | 26 |
| 6.935 | 6.514 | 6.136 | 5.492 | 4.964 | 3.990 | 3.331 | 2.856 | 2.500 | 2.222 | 2.000 | 27 |
| 6.961 | 6.534 | 6.152 | 5.502 | 4.970 | 3.992 | 3.331 | 2.857 | 2.500 | 2.222 | 2.000 | 28 |
| 6.983 | 6.551 | 6.166 | 5.510 | 4.975 | 3.994 | 3.332 | 2.857 | 2.500 | 2.222 | 2.000 | 29 |
| 7.003 | 6.566 | 6.177 | 5.517 | 4.979 | 3.995 | 3.332 | 2.857 | 2.500 | 2.222 | 2.000 | 30 |
| 7.105 | 6.642 | 6.234 | 5.548 | 4.997 | 3.999 | 3.333 | 2.857 | 2.500 | 2.222 | 2.000 | 40 |
| 7.133 | 6.661 | 6.246 | 5.554 | 4.999 | 4.000 | 3.333 | 2.857 | 2.500 | 2.222 | 2.000 | 50 |

Table 2 is the columnar sum of Table 1. Table 2 applies to *ordinary annuities*, in which the first cash flow occurs one time period beyond the date for which the present value is computed.

An *annuity due* is a series of equal cash flows for N time periods, but the first payment occurs immediately. The present value of the first payment equals the face value of the cash flow; Table 2 then is used to measure the present value of N − 1 remaining cash flows.

Example—Table 2. Determine the present value on January 1, 2010, of 20 lease payments; each payment of $10,000 is due on January 1, beginning in 2010. Assume an interest rate of 8 percent.

$$\text{Present Value} = \text{Immediate Payment} + \text{Present Value of 19 Subsequent Payments at 8\%}$$
$$= \$10{,}000 + (\$10{,}000 \times 9.604) = \$106{,}040$$