UNIVERSITI SAINS MALAYSIA

Peperiksaan Semester Cuti Panjang
Sidang Akademik 1997/98

April 1998

AFW361 - KEWANGAN KORPORAT I

Masa:  [3 jam]

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## ARAHAN

Sila pastikan bahawa kertas peperiksaan ini mengandungi **SEMBILAN (9)** muka surat sebelum anda memulakan peperiksaan.

Jawab **EMPAT (4)** soalan.

Soalan 1

(a)     Intradagang bercadang mempelbagaikan operasinya. Maklumat kewangan terbaru Intradagang adalah seperti berikut:

|  |  |
|---|---|
| Harga saham | RM  60 |
| Bilangan saham | 3,000 |
| Jumlah aset | RM600,000 |
| Jumlah liabiliti | RM500,000 |
| Pendapatan bersih | RM15,000 |

Intradagang bercadang membuat pelaburan yang mempunyai nisbah P/E yang sama. Kos pelaburan ialah RM75,000 dan akan dibiayai dengan terbitan ekuiti baru. Pulangan di dalam pelaburan ini akan sama dengan ROE Intradagang. Apakah akan terjadi kepada nilai buku sesaham, nilai pasaran sesaham dan EPS? Apakah NPV pelaburan ini?  Adakah pencairan (dilution) akan berlaku?

[20 markah]

(b)     Jika kita jelaskan bahawa indeks NPV adalah nisbah NPV: kos, apakah kaitan di antara indeks ini dengan indeks keberuntungan?

[5 markah]

## Soalan 2

(a)     Anda sedang menilai projek yang berharga RM960,000 dengan hayat selama 6 tahun dan tidak mempunyai nilai sisa. Susut nilai sepanjang hayat projek ialah kosong (garis lurus). Jualan dianggar sebanyak 150,000 unit setahun. Harga seunit ialah RM19.95, RM12.00 kos variabel seunit dan kos tetap RM750,000 setahun. Kadar cukai ialah 35% dan anda memerlukan 12% pulangan.

   (i)     Kirakan titik pulang modal (break-even point).  Berapakah darjah leveraj operasi (operating leverage) titik pulang modal?

   (ii)    Kirakan aliran tunai dan NPV. Apakah kepekaan NPV (sensitivity of NPV) ke atas perubahan di dalam jualan?  Terangkan tentang kekurangan 500 unit di dalam anggaran jualan.

   (iii)   Apakah kepekaan aliran tunai operasi (sensitivity of OCF) kepada perubahan kos variabel?  Terangkan apakah kefahaman anda tentang kekurangan sebanyak RM1.00 di dalam kos variabel.

[20 markah]

(b)     "Kadar faedah pinjaman jangka panjang adalah ditahap yang tinggi.  Jadi kebanyakan firma-firma mendapati lebih murah mendapat pembiayaan dari saham biasa atau pinjaman jangka pendek dari bank".  Bincangkan.

[5 markah]

## Soalan 3

(a)    (i)     Apakah pasaran cekap (efficient market)?

   (ii)    Sebut dan terangkan tiga jenis teori pasaran cekap.

   (iii)   Penganalisis teknikal, penganalisis fundamental dan pengurus profesional portfolio akan cuba meraih pulangan yang maksima di dalam pasaran saham.  Terangkan bagaimana usaha setiap kumpulan di atas dapat membantu pasaran menjadi cekap.

[15 markah]

(b)   Mesin A dan B saling menyingkiri (mutually exclusive) dan mempunyai pelaburan dan kos operasi seperti berikut. Mesin A bertahan cuma selama 2 tahun.

| Tahun | 0 | 1 | 2 | 3 |
|-------|--------|--------|--------|--------|
| A | 10,000 | 1,100 | 1,200 | - |
| B | 12,000 | 1,100 | 1,200 | 1,300 |

Kira kos tahunan setara (equivalent annual cost) untuk setiap pelaburan dengan menggunakan kadar diskaun 10%. Mesin yang manakah yang anda akan pilih dan mengapa?

Andaikan anda mempunyai mesin lama dan cuma boleh beroperasi selama 1 tahun sahaja lagi, tetapi akan memakan belanja sebanyak RM2,500 untuk membaiki dan RM1,800 untuk operasi. Adakah patut diganti dengan A atau B?

[10 markah]

Soalan 4

(a)   Modal saham dibenarkan Syarikat Indigo ialah 100,000 saham. Ekuiti semasa sebagaimana yang ditunjukkan di bawah:

| | |
|---|---|
| Saham biasa (RM.50 par value) | RM40,000 |
| Modal dibayar tambahan | 10,000 |
| Perolehan tertahan | 30,000 |
| Ekuiti biasa | 80,000 |
| Stok perbendaharaan (2000 saham) | 5,000 |
| Ekuiti biasa bersih | RM75,000 |

(i)    berapa banyakkah saham yang diterbitkan?
(ii)   berapa banyakkah saham sedia ada?
(iii)  berapa banyak lagikah saham boleh diterbitkan tanpa kelulusan pemegang saham?

(b)   Rujuk kepada soalan di atas. Andaikan bahawa syarikat tersebut menerbitkan sebanyak 10,000 saham dengan harga RM4.00 sesaham. Apakah yang akan berubah di dalam akaun di atas?

...4/-

(c) Apakah akan berlaku kepada akaun syarikat tersebut jika syarikat tersebut membeli 1,000 saham dengan harga RM4 sesaham?

[15 markah]

(d) Jelaskan dengan ringkas apakah:

(i) tawaran persendirian (private placement).
(ii) hutang bawahan (subordinated debt).
(iii) bon panggilan (callable bond).
(iv) kadar utama.
(v) waran.

[10 markah]

Soalan 5

(a) Perfima Industri bercadang untuk membesarkan pasarannya. Untuk pembiayaan projek ini, Perfima bercadang untuk mengeluarkan terbitan hak dengan harga langganan sebanyak RM10. Satu saham baru boleh dibeli untuk setiap dua saham lama. Sekarang Perfima mempunyai 100,000 saham sedia ada dengan harga RM40 sesaham.

Andaikan bahawa dana baru ini dilaburkan untuk memberi pulangan yang memuaskan, kira nilai:

(i) bilangan saham baru.
(ii) amaun pelaburan baru.
(iii) jumlah nilai Perfima selepas terbitan.
(iv) jumlah bilangan saham selepas terbitan.
(v) harga saham selepas terbitan.

[15 markah]

(b) Anda perlu memilih di antara dua jenis terbitan ini:

(i) Terbitan awam sebanyak RM10 juta nilai muka - pinjaman 10 tahun.

Kadar faedah pinjaman 8.5% dan pinjaman diterbitkan mengikut nilai muka. Pembezaan penaja jaminan (underwriting spread) ialah 1.5% dan perbelanjaan lain-lain sebanyak RM80,000.

...5/-

(ii)   Tawaran persendirian sebanyak RM10 juta nilai muka - pinjaman 10 tahun

Kadar faedah ke atas tawaran ialah 9% tetapi jumlah belanja terbitan ialah RM30,000.

(1)   Apakah perbezaan hasil (proceeds) ke atas belanja bersih firma?

(2)   Jika lain-lain maklumat tidak berubah, yang manakah urusan yang baik?

(3)   Apakah lain-lain faktor selain daripada kadar faedah dan kos terbitan yang anda patut ambilkira sebelum membuat pilihan?

[10 markah]

Table A-1  Present Value of $1 Due at the End of n Periods:

$$PVIF_{k,n} = \frac{1}{(1 + k)^n}$$

| Period | 1% | 2% | 3% | 4% | 5% | 6% | 7% | 8% | 9% | 10% | 12% | 14% | 15% | 16% | 18% | 20% | 24% | 28% | 32% | 36% |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | .9901 | .9804 | .9709 | .9615 | .9524 | .9434 | .9346 | .9259 | .9174 | .9091 | .8929 | .8772 | .8696 | .8621 | .8475 | .8333 | .8065 | .7813 | .7576 | .7353 |
| 2 | .9803 | .9612 | .9426 | .9246 | .9070 | .8900 | .8734 | .8573 | .8417 | .8264 | .7972 | .7695 | .7561 | .7432 | .7182 | .6944 | .6504 | .6104 | .5739 | .5407 |
| 3 | .9706 | .9423 | .9151 | .8890 | .8638 | .8396 | .8163 | .7938 | .7722 | .7513 | .7118 | .6750 | .6575 | .6407 | .6086 | .5787 | .5245 | .4768 | .4348 | .3975 |
| 4 | .9610 | .9238 | .8885 | .8548 | .8227 | .7921 | .7629 | .7350 | .7084 | .6830 | .6355 | .5921 | .5718 | .5523 | .5158 | .4823 | .4230 | .3725 | .3294 | .2923 |
| 5 | .9515 | .9057 | .8626 | .8219 | .7835 | .7473 | .7130 | .6806 | .6499 | .6209 | .5674 | .5194 | .4972 | .4761 | .4371 | .4019 | .3411 | .2910 | .2495 | .2149 |
| 6 | .9420 | .8880 | .8375 | .7903 | .7462 | .7050 | .6663 | .6302 | .5963 | .5645 | .5066 | .4556 | .4323 | .4104 | .3704 | .3349 | .2751 | .2274 | .1890 | .1580 |
| 7 | .9327 | .8706 | .8131 | .7599 | .7107 | .6651 | .6227 | .5835 | .5470 | .5132 | .4523 | .3996 | .3759 | .3538 | .3139 | .2791 | .2218 | .1776 | .1432 | .1162 |
| 8 | .9235 | .8535 | .7894 | .7307 | .6768 | .6274 | .5820 | .5403 | .5019 | .4665 | .4039 | .3506 | .3269 | .3050 | .2660 | .2326 | .1789 | .1388 | .1085 | .0854 |
| 9 | .9143 | .8368 | .7664 | .7026 | .6446 | .5919 | .5439 | .5002 | .4604 | .4241 | .3606 | .3075 | .2843 | .2630 | .2255 | .1938 | .1443 | .1084 | .0822 | .0628 |
| 10 | .9053 | .8203 | .7441 | .6756 | .6139 | .5584 | .5083 | .4632 | .4224 | .3855 | .3220 | .2697 | .2472 | .2267 | .1911 | .1615 | .1164 | .0847 | .0623 | .0462 |
| 11 | .8963 | .8043 | .7224 | .6496 | .5847 | .5268 | .4751 | .4289 | .3875 | .3505 | .2875 | .2366 | .2149 | .1954 | .1619 | .1346 | .0938 | .0662 | .0472 | .0340 |
| 12 | .8874 | .7885 | .7014 | .6246 | .5568 | .4970 | .4440 | .3971 | .3555 | .3186 | .2567 | .2076 | .1869 | .1685 | .1372 | .1122 | .0757 | .0517 | .0357 | .0250 |
| 13 | .8787 | .7730 | .6810 | .6006 | .5303 | .4688 | .4150 | .3677 | .3262 | .2897 | .2292 | .1821 | .1625 | .1452 | .1163 | .0935 | .0610 | .0404 | .0271 | .0184 |
| 14 | .8700 | .7579 | .6611 | .5775 | .5051 | .4423 | .3878 | .3405 | .2992 | .2633 | .2046 | .1597 | .1413 | .1252 | .0985 | .0779 | .0492 | .0316 | .0205 | .0135 |
| 15 | .8613 | .7430 | .6419 | .5553 | .4810 | .4173 | .3624 | .3152 | .2745 | .2394 | .1827 | .1401 | .1229 | .1079 | .0835 | .0649 | .0397 | .0247 | .0155 | .0099 |
| 16 | .8528 | .7284 | .6232 | .5339 | .4581 | .3936 | .3387 | .2919 | .2519 | .2176 | .1631 | .1229 | .1069 | .0980 | .0708 | .0541 | .0320 | .0193 | .0118 | .0073 |
| 17 | .8444 | .7142 | .6050 | .5134 | .4363 | .3714 | .3166 | .2703 | .2311 | .1978 | .1456 | .1078 | .0929 | .0802 | .0600 | .0451 | .0258 | .0150 | .0089 | .0054 |
| 18 | .8360 | .7002 | .5874 | .4936 | .4155 | .3503 | .2959 | .2502 | .2120 | .1799 | .1300 | .0946 | .0808 | .0691 | .0508 | .0376 | .0208 | .0118 | .0068 | .0039 |
| 19 | .8277 | .6864 | .5703 | .4746 | .3957 | .3305 | .2765 | .2317 | .1945 | .1635 | .1161 | .0829 | .0703 | .0596 | .0431 | .0313 | .0168 | .0092 | .0051 | .0029 |
| 20 | .8195 | .6730 | .5537 | .4564 | .3769 | .3118 | .2584 | .2145 | .1784 | .1486 | .1037 | .0728 | .0611 | .0514 | .0365 | .0261 | .0135 | .0072 | .0039 | .0021 |
| 21 | .8114 | .6598 | .5375 | .4388 | .3589 | .2942 | .2415 | .1987 | .1637 | .1351 | .0926 | .0638 | .0531 | .0443 | .0309 | .0217 | .0109 | .0056 | .0029 | .0016 |
| 22 | .8034 | .6468 | .5219 | .4220 | .3418 | .2775 | .2257 | .1839 | .1502 | .1228 | .0826 | .0560 | .0462 | .0382 | .0262 | .0181 | .0088 | .0044 | .0022 | .0012 |
| 23 | .7954 | .6342 | .5067 | .4057 | .3256 | .2618 | .2109 | .1703 | .1378 | .1117 | .0738 | .0491 | .0402 | .0329 | .0222 | .0151 | .0071 | .0034 | .0017 | .0008 |
| 24 | .7876 | .6217 | .4919 | .3901 | .3101 | .2470 | .1971 | .1577 | .1264 | .1015 | .0659 | .0431 | .0349 | .0284 | .0188 | .0126 | .0057 | .0027 | .0013 | .0006 |
| 25 | .7798 | .6095 | .4776 | .3751 | .2953 | .2330 | .1842 | .1460 | .1160 | .0923 | .0588 | .0378 | .0304 | .0245 | .0160 | .0105 | .0046 | .0021 | .0010 | .0005 |
| 26 | .7720 | .5976 | .4637 | .3604 | .2812 | .2198 | .1722 | .1352 | .1064 | .0839 | .0525 | .0331 | .0264 | .0211 | .0135 | .0087 | .0037 | .0016 | .0007 | .0003 |
| 27 | .7644 | .5859 | .4502 | .3468 | .2678 | .2074 | .1609 | .1252 | .0976 | .0763 | .0469 | .0291 | .0230 | .0182 | .0115 | .0073 | .0030 | .0013 | .0006 | .0002 |
| 28 | .7568 | .5744 | .4371 | .3335 | .2551 | .1956 | .1504 | .1159 | .0895 | .0693 | .0419 | .0255 | .0200 | .0157 | .0097 | .0061 | .0024 | .0010 | .0004 | .0002 |
| 29 | .7493 | .5631 | .4243 | .3207 | .2429 | .1846 | .1406 | .1073 | .0822 | .0630 | .0374 | .0224 | .0174 | .0135 | .0082 | .0051 | .0020 | .0008 | .0003 | .0001 |
| 30 | .7419 | .5521 | .4120 | .3083 | .2314 | .1741 | .1314 | .0994 | .0754 | .0573 | .0334 | .0196 | .0151 | .0116 | .0070 | .0042 | .0016 | .0006 | .0002 | .0001 |
| 35 | .7059 | .5000 | .3554 | .2534 | .1813 | .1301 | .0937 | .0676 | .0490 | .0356 | .0189 | .0102 | .0075 | .0055 | .0030 | .0017 | .0005 | .0002 | .0001 | · |
| 40 | .6717 | .4529 | .3066 | .2083 | .1420 | .0972 | .0668 | .0460 | .0318 | .0221 | .0107 | .0053 | .0037 | .0026 | .0013 | .0007 | .0002 | .0001 | · | · |
| 45 | .6391 | .4102 | .2644 | .1712 | .1113 | .0727 | .0476 | .0313 | .0207 | .0137 | .0061 | .0027 | .0019 | .0013 | .0006 | .0003 | .0001 | · | · | · |
| 50 | .6080 | .3715 | .2281 | .1407 | .0872 | .0543 | .0339 | .0213 | .0134 | .0085 | .0035 | .0014 | .0009 | .0006 | .0003 | .0001 | · | · | · | · |
| 55 | .5785 | .3365 | .1968 | .1157 | .0683 | .0406 | .0242 | .0145 | .0087 | .0053 | .0020 | .0007 | .0005 | .0003 | .0001 | · | · | · | · | · |

The factor is zero to four decimal places.

Table A-2  Present Value of an Annuity of $1 per Period for n Periods:

$$PVIFA_{k,n} = \sum_{t=1}^{n} \frac{1}{(1+k)^t} = \frac{1 - \frac{1}{(1+k)^n}}{k} = \frac{1}{k} - \frac{1}{k(1+k)^n}$$

| Number of Periods | 1% | 2% | 3% | 4% | 5% | 6% | 7% | 8% | 9% | 10% | 12% | 14% | 15% | 16% | 18% | 20% | 24% | 28% | 32% |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 0.9901 | 0.9804 | 0.9709 | 0.9615 | 0.9524 | 0.9434 | 0.9346 | 0.9259 | 0.9174 | 0.9091 | 0.8929 | 0.8772 | 0.8696 | 0.8621 | 0.8475 | 0.8333 | 0.8065 | 0.7813 | 0.7576 |
| 2 | 1.9704 | 1.9416 | 1.9135 | 1.8861 | 1.8594 | 1.8334 | 1.8080 | 1.7833 | 1.7591 | 1.7355 | 1.6901 | 1.6467 | 1.6257 | 1.6052 | 1.5656 | 1.5278 | 1.4568 | 1.3916 | 1.3315 |
| 3 | 2.9410 | 2.8839 | 2.8286 | 2.7751 | 2.7232 | 2.6730 | 2.6243 | 2.5771 | 2.5313 | 2.4869 | 2.4018 | 2.3216 | 2.2832 | 2.2459 | 2.1743 | 2.1065 | 1.9813 | 1.8684 | 1.7663 |
| 4 | 3.9020 | 3.8077 | 3.7171 | 3.6299 | 3.5460 | 3.4651 | 3.3872 | 3.3121 | 3.2397 | 3.1699 | 3.0373 | 2.9137 | 2.8550 | 2.7982 | 2.6901 | 2.5887 | 2.4043 | 2.2410 | 2.0957 |
| 5 | 4.8534 | 4.7135 | 4.5797 | 4.4518 | 4.3295 | 4.2124 | 4.1002 | 3.9927 | 3.8897 | 3.7908 | 3.6048 | 3.4331 | 3.3522 | 3.2743 | 3.1272 | 2.9906 | 2.7454 | 2.5320 | 2.3452 |
| 6 | 5.7955 | 5.6014 | 5.4172 | 5.2421 | 5.0757 | 4.9173 | 4.7665 | 4.6229 | 4.4859 | 4.3553 | 4.1114 | 3.8887 | 3.7845 | 3.6847 | 3.4976 | 3.3255 | 3.0205 | 2.7594 | 2.5342 |
| 7 | 6.7282 | 6.4720 | 6.2303 | 6.0021 | 5.7864 | 5.5824 | 5.3893 | 5.2064 | 5.0330 | 4.8684 | 4.5638 | 4.2883 | 4.1604 | 4.0386 | 3.8115 | 3.6046 | 3.2423 | 2.9370 | 2.6775 |
| 8 | 7.6517 | 7.3255 | 7.0197 | 6.7327 | 6.4632 | 6.2098 | 5.9713 | 5.7466 | 5.5348 | 5.3349 | 4.9676 | 4.6389 | 4.4873 | 4.3436 | 4.0776 | 3.8372 | 3.4212 | 3.0758 | 2.7860 |
| 9 | 8.5660 | 8.1622 | 7.7861 | 7.4353 | 7.1078 | 6.8017 | 6.5152 | 6.2469 | 5.9952 | 5.7590 | 5.3282 | 4.9464 | 4.7716 | 4.6065 | 4.3030 | 4.0310 | 3.5655 | 3.1842 | 2.8681 |
| 10 | 9.4713 | 8.9826 | 8.5302 | 8.1109 | 7.7217 | 7.3601 | 7.0236 | 6.7101 | 6.4177 | 6.1446 | 5.6502 | 5.2161 | 5.0188 | 4.8332 | 4.4941 | 4.1925 | 3.6819 | 3.2689 | 2.9304 |
| 11 | 10.3676 | 9.7868 | 9.2526 | 8.7605 | 8.3064 | 7.8869 | 7.4987 | 7.1390 | 6.8052 | 6.4951 | 5.9377 | 5.4527 | 5.2337 | 5.0286 | 4.6560 | 4.3271 | 3.7757 | 3.3351 | 2.9776 |
| 12 | 11.2551 | 10.5753 | 9.9540 | 9.3851 | 8.8633 | 8.3838 | 7.9427 | 7.5361 | 7.1607 | 6.8137 | 6.1944 | 5.6603 | 5.4206 | 5.1971 | 4.7932 | 4.4392 | 3.8514 | 3.3868 | 3.0133 |
| 13 | 12.1337 | 11.3484 | 10.6350 | 9.9856 | 9.3936 | 8.8527 | 8.3577 | 7.9038 | 7.4869 | 7.1034 | 6.4235 | 5.8424 | 5.5831 | 5.3423 | 4.9095 | 4.5327 | 3.9124 | 3.4272 | 3.0404 |
| 14 | 13.0037 | 12.1062 | 11.2961 | 10.5631 | 9.8986 | 9.2950 | 8.7455 | 8.2442 | 7.7862 | 7.3667 | 6.6282 | 6.0021 | 5.7245 | 5.4675 | 5.0081 | 4.6106 | 3.9616 | 3.4587 | 3.0609 |
| 15 | 13.8651 | 12.8493 | 11.9379 | 11.1184 | 10.3797 | 9.7122 | 9.1079 | 8.5595 | 8.0607 | 7.6061 | 6.8109 | 6.1422 | 5.8474 | 5.5755 | 5.0916 | 4.6755 | 4.0013 | 3.4834 | 3.0764 |
| 16 | 14.7179 | 13.5777 | 12.5611 | 11.6523 | 10.8378 | 10.1059 | 9.4466 | 8.8514 | 8.3126 | 7.8237 | 6.9740 | 6.2651 | 5.9542 | 5.6685 | 5.1624 | 4.7296 | 4.0333 | 3.5026 | 3.0882 |
| 17 | 15.5623 | 14.2919 | 13.1661 | 12.1657 | 11.2741 | 10.4773 | 9.7632 | 9.1216 | 8.5436 | 8.0216 | 7.1196 | 6.3729 | 6.0472 | 5.7487 | 5.2223 | 4.7746 | 4.0591 | 3.5177 | 3.0971 |
| 18 | 16.3983 | 14.9920 | 13.7535 | 12.6593 | 11.6896 | 10.8276 | 10.0591 | 9.3719 | 8.7556 | 8.2014 | 7.2497 | 6.4674 | 6.1280 | 5.8178 | 5.2732 | 4.8122 | 4.0799 | 3.5294 | 3.1039 |
| 19 | 17.2260 | 15.6785 | 14.3238 | 13.1339 | 12.0853 | 11.1581 | 10.3356 | 9.6036 | 8.9501 | 8.3649 | 7.3658 | 6.5504 | 6.1982 | 5.8775 | 5.3162 | 4.8435 | 4.0967 | 3.5386 | 3.1090 |
| 20 | 18.0456 | 16.3514 | 14.8775 | 13.5903 | 12.4622 | 11.4699 | 10.5940 | 9.8181 | 9.1285 | 8.5136 | 7.4694 | 6.6231 | 6.2593 | 5.9288 | 5.3527 | 4.8696 | 4.1103 | 3.5458 | 3.1129 |
| 21 | 18.8570 | 17.0112 | 15.4150 | 14.0292 | 12.8212 | 11.7641 | 10.8355 | 10.0168 | 9.2922 | 8.6487 | 7.5620 | 6.6870 | 6.3125 | 5.9731 | 5.3837 | 4.8913 | 4.1212 | 3.5514 | 3.1158 |
| 22 | 19.6604 | 17.6580 | 15.9369 | 14.4511 | 13.1630 | 12.0416 | 11.0612 | 10.2007 | 9.4424 | 8.7715 | 7.6446 | 6.7429 | 6.3587 | 6.0113 | 5.4099 | 4.9094 | 4.1300 | 3.5558 | 3.1180 |
| 23 | 20.4558 | 18.2922 | 16.4436 | 14.8568 | 13.4886 | 12.3034 | 11.2722 | 10.3711 | 9.5802 | 8.8832 | 7.7184 | 6.7921 | 6.3988 | 6.0442 | 5.4321 | 4.9245 | 4.1371 | 3.5592 | 3.1197 |
| 24 | 21.2434 | 18.9139 | 16.9355 | 15.2470 | 13.7986 | 12.5504 | 11.4693 | 10.5288 | 9.7066 | 8.9847 | 7.7843 | 6.8351 | 6.4338 | 6.0726 | 5.4509 | 4.9371 | 4.1428 | 3.5619 | 3.1210 |
| 25 | 22.0232 | 19.5235 | 17.4131 | 15.6221 | 14.0939 | 12.7834 | 11.6536 | 10.6748 | 9.8226 | 9.0770 | 7.8431 | 6.8729 | 6.4641 | 6.0971 | 5.4669 | 4.9476 | 4.1474 | 3.5640 | 3.1220 |
| 26 | 22.7952 | 20.1210 | 17.8768 | 15.9828 | 14.3752 | 13.0032 | 11.8258 | 10.8100 | 9.9290 | 9.1609 | 7.8957 | 6.9061 | 6.4906 | 6.1182 | 5.4804 | 4.9563 | 4.1511 | 3.5656 | 3.1227 |
| 27 | 23.5596 | 20.7069 | 18.3270 | 16.3296 | 14.6430 | 13.2105 | 11.9867 | 10.9352 | 10.0266 | 9.2372 | 7.9426 | 6.9352 | 6.5135 | 6.1364 | 5.4919 | 4.9636 | 4.1542 | 3.5669 | 3.1233 |
| 28 | 24.3164 | 21.2813 | 18.7641 | 16.6631 | 14.8981 | 13.4062 | 12.1371 | 11.0511 | 10.1161 | 9.3066 | 7.9844 | 6.9607 | 6.5335 | 6.1520 | 5.5016 | 4.9697 | 4.1566 | 3.5679 | 3.1237 |
| 29 | 25.0658 | 21.8444 | 19.1885 | 16.9837 | 15.1411 | 13.5907 | 12.2777 | 11.1584 | 10.1983 | 9.3696 | 8.0218 | 6.9830 | 6.5509 | 6.1656 | 5.5098 | 4.9747 | 4.1585 | 3.5687 | 3.1240 |
| 30 | 25.8077 | 22.3965 | 19.6004 | 17.2920 | 15.3725 | 13.7648 | 12.4090 | 11.2578 | 10.2737 | 9.4269 | 8.0552 | 7.0027 | 6.5660 | 6.1772 | 5.5168 | 4.9789 | 4.1601 | 3.5693 | 3.1242 |
| 35 | 29.4086 | 24.9986 | 21.4872 | 18.6646 | 16.3742 | 14.4982 | 12.9477 | 11.6546 | 10.5668 | 9.6442 | 8.1755 | 7.0700 | 6.6166 | 6.2153 | 5.5386 | 4.9915 | 4.1644 | 3.5708 | 3.1248 |
| 40 | 32.8347 | 27.3555 | 23.1148 | 19.7928 | 17.1591 | 15.0463 | 13.3317 | 11.9246 | 10.7574 | 9.7791 | 8.2438 | 7.1050 | 6.6418 | 6.2335 | 5.5482 | 4.9966 | 4.1659 | 3.5712 | 3.1250 |
| 45 | 36.0945 | 29.4902 | 24.5187 | 20.7200 | 17.7741 | 15.4558 | 13.6055 | 12.1084 | 10.8812 | 9.8628 | 8.2825 | 7.1232 | 6.6543 | 6.2421 | 5.5523 | 4.9986 | 4.1664 | 3.5714 | 3.1250 |
| 50 | 39.1961 | 31.4236 | 25.7298 | 21.4822 | 18.2559 | 15.7619 | 13.8007 | 12.2335 | 10.9617 | 9.9148 | 8.3045 | 7.1327 | 6.6605 | 6.2463 | 5.5541 | 4.9995 | 4.1666 | 3.5714 | 3.1250 |
| 55 | 42.1472 | 33.1748 | 26.7744 | 22.1086 | 18.6335 | 15.9905 | 13.9399 | 12.3186 | 11.0140 | 9.9471 | 8.3170 | 7.1376 | 6.6636 | 6.2482 | 5.5549 | 4.9998 | 4.1666 | 3.5714 | 3.1250 |

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Table A-3  Future Value of $1 at the End of n Periods:

$$FVIF_{k,n} = (1 + k)^n$$

| Period | 1% | 2% | 3% | 4% | 5% | 6% | 7% | 8% | 9% | 10% | 12% | 14% | 15% | 16% | 18% | 20% | 24% | 28% | 32% | 36% |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 1.0100 | 1.0200 | 1.0300 | 1.0400 | 1.0500 | 1.0600 | 1.0700 | 1.0800 | 1.0900 | 1.1000 | 1.1200 | 1.1400 | 1.1500 | 1.1600 | 1.1800 | 1.2000 | 1.2400 | 1.2800 | 1.3200 | 1.3600 |
| 2 | 1.0201 | 1.0404 | 1.0609 | 1.0816 | 1.1025 | 1.1236 | 1.1449 | 1.1664 | 1.1881 | 1.2100 | 1.2544 | 1.2996 | 1.3225 | 1.3456 | 1.3924 | 1.4400 | 1.5376 | 1.6384 | 1.7424 | 1.8496 |
| 3 | 1.0303 | 1.0612 | 1.0927 | 1.1249 | 1.1576 | 1.1910 | 1.2250 | 1.2597 | 1.2950 | 1.3310 | 1.4049 | 1.4815 | 1.5209 | 1.5609 | 1.6430 | 1.7280 | 1.9066 | 2.0972 | 2.3000 | 2.5155 |
| 4 | 1.0406 | 1.0824 | 1.1255 | 1.1699 | 1.2155 | 1.2625 | 1.3108 | 1.3605 | 1.4116 | 1.4641 | 1.5735 | 1.6890 | 1.7490 | 1.8106 | 1.9388 | 2.0736 | 2.3642 | 2.6844 | 3.0360 | 3.4210 |
| 5 | 1.0510 | 1.1041 | 1.1593 | 1.2167 | 1.2763 | 1.3382 | 1.4026 | 1.4693 | 1.5386 | 1.6105 | 1.7623 | 1.9254 | 2.0114 | 2.1003 | 2.2878 | 2.4883 | 2.9316 | 3.4360 | 4.0075 | 4.6526 |
| 6 | 1.0615 | 1.1262 | 1.1941 | 1.2653 | 1.3401 | 1.4185 | 1.5007 | 1.5869 | 1.6771 | 1.7716 | 1.9738 | 2.1950 | 2.3131 | 2.4364 | 2.6996 | 2.9860 | 3.6352 | 4.3980 | 5.2899 | 6.3275 |
| 7 | 1.0721 | 1.1487 | 1.2299 | 1.3159 | 1.4071 | 1.5036 | 1.6058 | 1.7138 | 1.8280 | 1.9487 | 2.2107 | 2.5023 | 2.6600 | 2.8262 | 3.1855 | 3.5832 | 4.5077 | 5.6295 | 6.9826 | 8.6054 |
| 8 | 1.0829 | 1.1717 | 1.2668 | 1.3686 | 1.4775 | 1.5938 | 1.7182 | 1.8509 | 1.9926 | 2.1436 | 2.4760 | 2.8526 | 3.0590 | 3.2784 | 3.7589 | 4.2998 | 5.5895 | 7.2058 | 9.2170 | 11.703 |
| 9 | 1.0937 | 1.1951 | 1.3048 | 1.4233 | 1.5513 | 1.6895 | 1.8385 | 1.9990 | 2.1719 | 2.3579 | 2.7731 | 3.2519 | 3.5179 | 3.8030 | 4.4355 | 5.1598 | 6.9310 | 9.2234 | 12.166 | 15.917 |
| 10 | 1.1046 | 1.2190 | 1.3439 | 1.4802 | 1.6289 | 1.7908 | 1.9672 | 2.1589 | 2.3674 | 2.5937 | 3.1058 | 3.7072 | 4.0456 | 4.4114 | 5.2338 | 6.1917 | 8.5944 | 11.806 | 16.060 | 21.647 |
| 11 | 1.1157 | 1.2434 | 1.3842 | 1.5395 | 1.7103 | 1.8983 | 2.1049 | 2.3316 | 2.5804 | 2.8531 | 3.4785 | 4.2262 | 4.6524 | 5.1173 | 6.1759 | 7.4301 | 10.657 | 15.112 | 21.199 | 29.439 |
| 12 | 1.1268 | 1.2682 | 1.4258 | 1.6010 | 1.7959 | 2.0122 | 2.2522 | 2.5182 | 2.8127 | 3.1384 | 3.8960 | 4.8179 | 5.3503 | 5.9360 | 7.2876 | 8.9161 | 13.215 | 19.343 | 27.983 | 40.037 |
| 13 | 1.1381 | 1.2936 | 1.4685 | 1.6651 | 1.8856 | 2.1329 | 2.4098 | 2.7196 | 3.0658 | 3.4523 | 4.3635 | 5.4924 | 6.1528 | 6.8858 | 8.5994 | 10.699 | 16.386 | 24.759 | 36.937 | 54.451 |
| 14 | 1.1495 | 1.3195 | 1.5126 | 1.7317 | 1.9799 | 2.2609 | 2.5785 | 2.9372 | 3.3417 | 3.7975 | 4.8871 | 6.2613 | 7.0757 | 7.9875 | 10.147 | 12.839 | 20.319 | 31.691 | 48.757 | 74.053 |
| 15 | 1.1610 | 1.3459 | 1.5580 | 1.8009 | 2.0789 | 2.3966 | 2.7590 | 3.1722 | 3.6425 | 4.1772 | 5.4736 | 7.1379 | 8.1371 | 9.2655 | 11.974 | 15.407 | 25.196 | 40.565 | 64.359 | 100.71 |
| 16 | 1.1726 | 1.3728 | 1.6047 | 1.8730 | 2.1829 | 2.5404 | 2.9522 | 3.4259 | 3.9703 | 4.5950 | 6.1304 | 8.1372 | 9.3576 | 10.748 | 14.129 | 18.488 | 31.243 | 51.923 | 84.954 | 136.97 |
| 17 | 1.1843 | 1.4002 | 1.6528 | 1.9479 | 2.2920 | 2.6928 | 3.1588 | 3.7000 | 4.3276 | 5.0545 | 6.8660 | 9.2765 | 10.761 | 12.468 | 16.672 | 22.186 | 38.741 | 66.461 | 112.14 | 186.28 |
| 18 | 1.1961 | 1.4282 | 1.7024 | 2.0258 | 2.4066 | 2.8543 | 3.3799 | 3.9960 | 4.7171 | 5.5599 | 7.6900 | 10.575 | 12.375 | 14.463 | 19.673 | 26.623 | 48.039 | 85.071 | 148.02 | 253.34 |
| 19 | 1.2081 | 1.4568 | 1.7535 | 2.1068 | 2.5270 | 3.0256 | 3.6165 | 4.3157 | 5.1417 | 6.1159 | 8.6128 | 12.056 | 14.232 | 16.777 | 23.214 | 31.948 | 59.568 | 108.89 | 195.39 | 344.54 |
| 20 | 1.2202 | 1.4859 | 1.8061 | 2.1911 | 2.6533 | 3.2071 | 3.8697 | 4.6610 | 5.6044 | 6.7275 | 9.6463 | 13.743 | 16.367 | 19.461 | 27.393 | 38.338 | 73.864 | 139.38 | 257.92 | 468.57 |
| 21 | 1.2324 | 1.5157 | 1.8603 | 2.2788 | 2.7860 | 3.3996 | 4.1406 | 5.0338 | 6.1088 | 7.4002 | 10.804 | 15.668 | 18.822 | 22.574 | 32.324 | 46.005 | 91.592 | 178.41 | 340.45 | 637.26 |
| 22 | 1.2447 | 1.5460 | 1.9161 | 2.3699 | 2.9253 | 3.6035 | 4.4304 | 5.4365 | 6.6586 | 8.1403 | 12.100 | 17.861 | 21.645 | 26.186 | 38.142 | 55.206 | 113.57 | 228.36 | 449.39 | 866.67 |
| 23 | 1.2572 | 1.5769 | 1.9736 | 2.4647 | 3.0715 | 3.8197 | 4.7405 | 5.8715 | 7.2579 | 8.9543 | 13.552 | 20.362 | 24.891 | 30.376 | 45.008 | 66.247 | 140.83 | 292.30 | 593.20 | 1178.7 |
| 24 | 1.2697 | 1.6084 | 2.0328 | 2.5633 | 3.2251 | 4.0489 | 5.0724 | 6.3412 | 7.9111 | 9.8497 | 15.179 | 23.212 | 28.625 | 35.236 | 53.109 | 79.497 | 174.63 | 374.14 | 783.02 | 1603.0 |
| 25 | 1.2824 | 1.6406 | 2.0938 | 2.6658 | 3.3864 | 4.2919 | 5.4274 | 6.8485 | 8.6231 | 10.835 | 17.000 | 26.462 | 32.919 | 40.874 | 62.669 | 95.396 | 216.54 | 478.90 | 1033.6 | 2180.1 |
| 26 | 1.2953 | 1.6734 | 2.1566 | 2.7725 | 3.5557 | 4.5494 | 5.8074 | 7.3964 | 9.3992 | 11.918 | 19.040 | 30.167 | 37.857 | 47.414 | 73.949 | 114.48 | 268.51 | 613.00 | 1364.3 | 2964.9 |
| 27 | 1.3082 | 1.7069 | 2.2213 | 2.8834 | 3.7335 | 4.8223 | 6.2139 | 7.9881 | 10.245 | 13.110 | 21.325 | 34.390 | 43.535 | 55.000 | 87.260 | 137.37 | 332.95 | 784.64 | 1800.9 | 4032.3 |
| 28 | 1.3213 | 1.7410 | 2.2879 | 2.9987 | 3.9201 | 5.1117 | 6.6488 | 8.6271 | 11.167 | 14.421 | 23.884 | 39.204 | 50.066 | 63.800 | 102.97 | 164.84 | 412.86 | 1004.3 | 2377.2 | 5483.9 |
| 29 | 1.3345 | 1.7758 | 2.3566 | 3.1187 | 4.1161 | 5.4184 | 7.1143 | 9.3173 | 12.172 | 15.863 | 26.750 | 44.693 | 57.575 | 74.009 | 121.50 | 197.81 | 511.95 | 1285.6 | 3137.9 | 7458.1 |
| 30 | 1.3478 | 1.8114 | 2.4273 | 3.2434 | 4.3219 | 5.7435 | 7.6123 | 10.063 | 13.268 | 17.449 | 29.960 | 50.950 | 66.212 | 85.850 | 143.37 | 237.38 | 634.82 | 1645.5 | 4142.1 | 10143. |
| 40 | 1.4889 | 2.2080 | 3.2620 | 4.8010 | 7.0400 | 10.286 | 14.974 | 21.725 | 31.409 | 45.259 | 93.051 | 188.88 | 267.86 | 378.72 | 750.38 | 1469.8 | 5455.9 | 19427. | 66521. | * |
| 50 | 1.6446 | 2.6916 | 4.3839 | 7.1067 | 11.467 | 18.420 | 29.457 | 46.902 | 74.358 | 117.39 | 289.00 | 700.23 | 1083.7 | 1670.7 | 3927.4 | 9100.4 | 46890. | * | * | * |
| 60 | 1.8167 | 3.2810 | 5.8916 | 10.520 | 18.679 | 32.988 | 57.946 | 101.26 | 176.03 | 304.48 | 897.60 | 2595.9 | 4384.0 | 7370.2 | 20555. | 56348. | * | * | * | * |

*FVIF > 99.999

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Table A-4  Sum of an Annuity of $1 per Period for n Periods:

$$FVIFA_{k,n} = \sum_{t=1}^{n}(1+k)^{n-t} = \frac{(1+k)^n - 1}{k}$$

| Number of Periods | 1% | 2% | 3% | 4% | 5% | 6% | 7% | 8% | 9% | 10% | 12% | 14% | 15% | 16% | 18% | 20% | 24% | 28% | 32% | 36% |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| 2 | 2.0100 | 2.0200 | 2.0300 | 2.0400 | 2.0500 | 2.0600 | 2.0700 | 2.0800 | 2.0900 | 2.1000 | 2.1200 | 2.1400 | 2.1500 | 2.1600 | 2.1800 | 2.2000 | 2.2400 | 2.2800 | 2.3200 | 2.3600 |
| 3 | 3.0301 | 3.0604 | 3.0909 | 3.1216 | 3.1525 | 3.1836 | 3.2149 | 3.2464 | 3.2781 | 3.3100 | 3.3744 | 3.4396 | 3.4725 | 3.5056 | 3.5724 | 3.6400 | 3.7776 | 3.9184 | 4.0624 | 4.2096 |
| 4 | 4.0604 | 4.1216 | 4.1836 | 4.2465 | 4.3101 | 4.3746 | 4.4399 | 4.5061 | 4.5731 | 4.6410 | 4.7793 | 4.9211 | 4.9934 | 5.0665 | 5.2154 | 5.3680 | 5.6842 | 6.0156 | 6.3624 | 6.7251 |
| 5 | 5.1010 | 5.2040 | 5.3091 | 5.4163 | 5.5256 | 5.6371 | 5.7507 | 5.8666 | 5.9847 | 6.1051 | 6.3528 | 6.6101 | 6.7424 | 6.8771 | 7.1542 | 7.4416 | 8.0484 | 8.6999 | 9.3983 | 10.146 |
| 6 | 6.1520 | 6.3081 | 6.4684 | 6.6330 | 6.8019 | 6.9753 | 7.1533 | 7.3359 | 7.5233 | 7.7156 | 8.1152 | 8.5355 | 8.7537 | 8.9775 | 9.4420 | 9.9299 | 10.980 | 12.136 | 13.406 | 14.799 |
| 7 | 7.2135 | 7.4343 | 7.6625 | 7.8983 | 8.1420 | 8.3938 | 8.6540 | 8.9228 | 9.2004 | 9.4872 | 10.089 | 10.730 | 11.067 | 11.414 | 12.142 | 12.916 | 14.615 | 16.534 | 18.696 | 21.126 |
| 8 | 8.2857 | 8.5830 | 8.8923 | 9.2142 | 9.5491 | 9.8975 | 10.260 | 10.637 | 11.028 | 11.436 | 12.300 | 13.233 | 13.727 | 14.240 | 15.327 | 16.499 | 19.123 | 22.163 | 25.678 | 29.732 |
| 9 | 9.3685 | 9.7546 | 10.159 | 10.583 | 11.027 | 11.491 | 11.978 | 12.488 | 13.021 | 13.579 | 14.776 | 16.085 | 16.786 | 17.519 | 19.086 | 20.799 | 24.712 | 29.369 | 34.895 | 41.435 |
| 10 | 10.462 | 10.950 | 11.464 | 12.006 | 12.578 | 13.181 | 13.816 | 14.487 | 15.193 | 15.937 | 17.549 | 19.337 | 20.304 | 21.321 | 23.521 | 25.959 | 31.643 | 38.593 | 47.062 | 57.352 |
| 11 | 11.567 | 12.169 | 12.808 | 13.486 | 14.207 | 14.972 | 15.784 | 16.645 | 17.560 | 18.531 | 20.655 | 23.045 | 24.349 | 25.733 | 28.755 | 32.150 | 40.238 | 50.398 | 63.122 | 78.998 |
| 12 | 12.683 | 13.412 | 14.192 | 15.026 | 15.917 | 16.870 | 17.888 | 18.977 | 20.141 | 21.384 | 24.133 | 27.271 | 29.002 | 30.850 | 34.931 | 39.581 | 50.895 | 65.510 | 84.320 | 108.44 |
| 13 | 13.809 | 14.680 | 15.618 | 16.627 | 17.713 | 18.882 | 20.141 | 21.495 | 22.953 | 24.523 | 28.029 | 32.089 | 34.352 | 36.786 | 42.219 | 48.497 | 64.110 | 84.853 | 112.30 | 148.47 |
| 14 | 14.947 | 15.974 | 17.086 | 18.292 | 19.599 | 21.015 | 22.550 | 24.215 | 26.019 | 27.975 | 32.393 | 37.581 | 40.505 | 43.672 | 50.818 | 59.196 | 80.496 | 109.61 | 149.24 | 202.93 |
| 15 | 16.097 | 17.293 | 18.599 | 20.024 | 21.579 | 23.276 | 25.129 | 27.152 | 29.361 | 31.772 | 37.280 | 43.842 | 47.580 | 51.660 | 60.965 | 72.035 | 100.82 | 141.30 | 198.00 | 276.98 |
| 16 | 17.258 | 18.639 | 20.157 | 21.825 | 23.657 | 25.673 | 27.888 | 30.324 | 33.003 | 35.950 | 42.753 | 50.980 | 55.717 | 60.925 | 72.939 | 87.442 | 126.01 | 181.87 | 262.36 | 377.69 |
| 17 | 18.430 | 20.012 | 21.762 | 23.698 | 25.840 | 28.213 | 30.840 | 33.750 | 36.974 | 40.545 | 48.884 | 59.118 | 65.075 | 71.673 | 87.068 | 105.93 | 157.25 | 233.79 | 347.31 | 514.66 |
| 18 | 19.615 | 21.412 | 23.414 | 25.645 | 28.132 | 30.906 | 33.999 | 37.450 | 41.301 | 45.599 | 55.750 | 68.394 | 75.836 | 84.141 | 103.74 | 128.12 | 195.99 | 300.25 | 459.45 | 700.94 |
| 19 | 20.811 | 22.841 | 25.117 | 27.671 | 30.539 | 33.760 | 37.379 | 41.446 | 46.018 | 51.159 | 63.440 | 78.969 | 88.212 | 98.603 | 123.41 | 154.74 | 244.03 | 385.32 | 607.47 | 954.28 |
| 20 | 22.019 | 24.297 | 26.870 | 29.778 | 33.066 | 36.786 | 40.995 | 45.762 | 51.160 | 57.275 | 72.052 | 91.025 | 102.44 | 115.38 | 146.63 | 186.69 | 303.60 | 494.21 | 802.86 | 1298.8 |
| 21 | 23.239 | 25.783 | 28.676 | 31.969 | 35.719 | 39.993 | 44.865 | 50.423 | 56.765 | 64.002 | 81.699 | 104.77 | 118.81 | 134.84 | 174.02 | 225.03 | 377.46 | 633.59 | 1060.8 | 1767.4 |
| 22 | 24.472 | 27.299 | 30.537 | 34.248 | 38.505 | 43.392 | 49.006 | 55.457 | 62.873 | 71.403 | 92.503 | 120.44 | 137.63 | 157.41 | 206.34 | 271.03 | 469.06 | 812.00 | 1401.2 | 2404.7 |
| 23 | 25.716 | 28.845 | 32.453 | 36.618 | 41.430 | 46.996 | 53.436 | 60.893 | 69.532 | 79.543 | 104.60 | 138.30 | 159.28 | 183.60 | 244.49 | 326.24 | 582.63 | 1040.4 | 1850.6 | 3271.3 |
| 24 | 26.973 | 30.422 | 34.426 | 39.083 | 44.502 | 50.816 | 58.177 | 66.765 | 76.790 | 88.497 | 118.16 | 158.66 | 184.17 | 213.98 | 289.49 | 392.48 | 723.46 | 1332.7 | 2443.8 | 4450.0 |
| 25 | 28.243 | 32.030 | 36.459 | 41.646 | 47.727 | 54.865 | 63.249 | 73.106 | 84.701 | 98.347 | 133.33 | 181.87 | 212.79 | 249.21 | 342.60 | 471.98 | 898.09 | 1706.8 | 3226.8 | 6053.0 |
| 26 | 29.526 | 33.671 | 38.553 | 44.312 | 51.113 | 59.156 | 68.676 | 79.954 | 93.324 | 109.18 | 150.33 | 208.33 | 245.71 | 290.09 | 405.27 | 567.38 | 1114.6 | 2185.7 | 4260.4 | 823.13 |
| 27 | 30.821 | 35.344 | 40.710 | 47.084 | 54.669 | 63.706 | 74.484 | 87.351 | 102.72 | 121.10 | 169.37 | 238.50 | 283.57 | 337.50 | 479.22 | 681.85 | 1383.1 | 2798.7 | 5624.8 | 11198.0 |
| 28 | 32.129 | 37.051 | 42.931 | 49.968 | 58.403 | 68.528 | 80.698 | 95.339 | 112.97 | 134.21 | 190.70 | 272.89 | 327.10 | 392.50 | 566.48 | 819.22 | 1716.1 | 3583.3 | 7425.7 | 15230.3 |
| 29 | 33.450 | 38.792 | 45.219 | 52.966 | 62.323 | 73.640 | 87.347 | 103.97 | 124.14 | 148.63 | 214.58 | 312.09 | 377.17 | 456.30 | 669.45 | 984.07 | 2129.0 | 4587.7 | 9802.9 | 20714.2 |
| 30 | 34.785 | 40.568 | 47.575 | 56.085 | 66.439 | 79.058 | 94.461 | 113.28 | 136.31 | 164.49 | 241.33 | 356.79 | 434.75 | 530.31 | 790.95 | 1181.9 | 2640.9 | 5873.2 | 12941. | 28172.3 |
| 40 | 48.886 | 60.402 | 75.401 | 95.026 | 120.80 | 154.76 | 199.64 | 259.06 | 337.88 | 442.59 | 767.09 | 1342.0 | 1779.1 | 2360.8 | 4163.2 | 7343.9 | 22729. | 69377. | * | * |
| 50 | 64.463 | 84.579 | 112.80 | 152.67 | 209.35 | 290.34 | 406.53 | 573.77 | 815.08 | 1163.9 | 2400.0 | 4994.5 | 7217.7 | 10436. | 21813. | 45497. | * | * |  |  |
| 60 | 81.670 | 114.05 | 163.05 | 237.99 | 353.58 | 533.13 | 813.52 | 1253.2 | 1944.8 | 3034.8 | 7471.6 | 18535. | 29220. | 46058. | * |  |  |  |  |  |

*FVIFA > 99,999.

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