Solution Chapter 4

4.15 $i = 0.12/12 = 1\%$ per month

    Nominal per 6 months $= 0.01(6) = 6\%$

    Effective per 6 months $= (1 + 0.06/6)^6 - 1$

                             $= 6.15\%$

4.17 P = weekly; CP = quarterly

4.37 $2{,}000{,}000 = A(P/A,3\%,8) + 50{,}000(P/G,3\%,8)$

    $2{,}000{,}000 = A(7.0197) + 50{,}000(23.4806)$

          $A = \$117{,}665$

4.38 $P = 1000 + 2000(P/A,1.5\%,12) + 3000(P/A,1.5\%,16)(P/F,1.5\%,12)$

    $= 1000 + 2000(10.9075) + 3000(14.1313)(0.8364)$

    $= \$58{,}273$

4.42 Move withdrawals to beginning of periods and deposits to end; then find F.

    $F = 1600(F/P,4\%,5) + 1400(F/P,4\%,4) - 2600(F/P,4\%,3) + 1000(F/P,4\%,2)$

        $-1000(F/P,4\%,1)$

    $= 1600(1.2167) + 1400(1.1699) - 2600(1.1249) + 1000(1.0816) - 1000(1.04)$

    $= \$701.44$

4.46 $0.127 = e^r - 1$

          $r/yr = 11.96\%$

      $r\,/quarter = 2.99\%$

4.55 (a) First move cash flow in years 0-4 to year 4 at $i = 12\%$.

        $F = 5000(F/P,12\%,4) + 6000(F/A,12\%,4)$

          $= 5000(1.5735) + 6000(4.7793)$

          $= \$36{,}543$

        Now move the total to year 5 at $i = 20\%$.

        $F = 36{,}543(F/P,20\%,1) + 9000$

          $= 36{,}543(1.20) + 9000$

          $= \$52{,}852$

    (b) Substitute A values for annual cash flows, including year 5 with the factor

        $(F/P,20\%,0) = 1.00$

        $52{,}852 = A\{[(F/P,12\%,4) + (F/A,12\%,4)](F/P,20\%,1) + (F/P,20\%,0)\}$

           $= A\{[(1.5735) + (4.7793)](1.20) + 1.00\}$

           $= A(8.62336)$

          $A = \$6129$ per year for years 0 through 5 (a total of 6 A values).