7. The one-year rate of return, $r$, is given by:

$$r = \frac{(\text{Ending Price of a Share} - \text{Beginning Price} + \text{Cash Dividend})}{\text{Beginning Price}}$$

So, for this problem we have:

$$r = \frac{(112-105)+10}{105} = \frac{17}{105} = .1619 \text{ (or 16.19%)}$$

8. The dividend income component is defined as:

$$\text{Dividend Income Component} = \frac{\text{Cash Dividend}}{\text{Beginning Price}}$$

So, for this problem we have:

$$\text{Dividend Income Component} = \frac{10}{105} = .0952 \text{ (or 9.52%)}$$

9. At the current exchange rate, to purchase the $1000 U.S. government bond the French investor needs 5350 French Francs (since the current exchange rate is 5.35 French Francs / U.S. Dollar). In one year, the investor receives 1030 U.S. Dollars (since the interest rate on the $1000 U.S. government bond is 3%). To compute the realized French Franc rate of return on this bond, this U.S. dollar sum must be converted to French Francs. Since the exchange rate one year from now is assumed to be 7.80 French Francs / U.S. Dollar, 1030 U.S. Dollars one year from now will be worth 8034 French Francs. Thus, the realized one-year French Franc rate of return to holding the U.S. government bond is:

$$\text{French Franc Rate of Return} = \frac{8034-5350}{5350} = 0.5017 \text{ (or 50.17%)}$$

10. We need to solve for $x$ as follows:

$$\frac{(1030x)-5350}{5350} = 0.06 \Rightarrow 1030x = 5350 + 321 \Rightarrow x = \frac{5671}{1030} \Rightarrow x = 5.505825$$

11. We first need to compute $FV$. For this problem we have: $PV = $675, $i = 9\%$, and $n = 6$. Recalling that:

$$FV = PV(1 + i)^n,$$

we have:

$$FV = $675(1 + 0.09)^6 = $1132.04$$

The total interest earned is this $FV$ of $1132.04 minus the initial $PV$ of $675$, i.e., $457.04$. Next, the simple interest earned per year is given by $0.09 \times $675 = $60.75$. Over a period of six years, the total simple interest earned, then, is $6 \times $60.75 = $364.50$. So, since the compound interest earned is equal to the total interest minus the simple interest, we have:
12. To answer this problem, we need to compute the present value of an ordinary annuity. Recall that for an ordinary annuity which makes an annual payment equal to $PMT$ for $n$ years, the $PV$, computed using the interest rate $i$ as the discount rate, is given by:

$$PV = \frac{1-(1+i)^{-n}}{i} \times PMT,$$

which gives us:

$$PV = \frac{1-(1.07)^{-20}}{0.07} \times 100,000 = 1,059,401.43$$

13. With weekly compounding, $PV = 750$, $i = 10.4\%$, $n = 3$ years = 156 weeks, we have:

$$FV = 750 \times (1 + (.104/52))^{156} = 750 \times (1.002)^{156} = 1024.30$$

14. With continuous compounding and $i = 6.86\%$:

$$EFF = e^{.0686} - 1 = .071 \text{ (or 7.1\%)}$$

15. To compute the bond’s yield to maturity, we need to solve for $i$ as follows:

$$500 = 100 \times (1 + i)^{20} \Rightarrow (1 + i)^{20} = 5 \Rightarrow i = 5^{0.05} - 1 \Rightarrow i = 0.0838 \text{ (or 8.38\%)}$$

16. To compute the $NPV$, we first need to compute the $PV$ of the bond using a market capitalization rate of 7.5%:

$$PV = 500/1.075^{20} = 117.71$$

Then, the $NPV$ is given by the difference between the $PV$ of the bond and its price:

$$NPV = 117.71 - 100 = 17.71$$

17. In Problem #15, we saw that the bond’s internal rate of return is 8.38%. Since this is higher than the opportunity cost of capital (i.e., the 7.5% that can be earned on funds in the bank account described in Problem #16), the rate of return decision implies that an investor should prefer to purchase the bond.

18. With semiannual compounding, $PV = 675$, $i = 6.75\%$, $n = 6.5$ years = 13 half-years, we have:

$$FV = 675 \times (1 + (.0675/2))^{13} = 675 \times (1.03375)^{13} = 1039.22$$

19. The solution is given by:

$$11,050 \times 1.06 \times 1.05 \times 1.035 = 12,729.10$$

20. We have:

**Effective Annual Rate for BankAnnual = 7.6\%**.

**Effective Annual Rate for BankDaily = (1 + (0.075/365))^{365} − 1 = 0.07788 \text{ (or 7.788\%)}**.
So, based on effective annual rates, you would prefer BankDaily, since its effective annual rate is higher than that offered by BankAnnual.

21. You could invest $1 today in dollar-denominated bonds and have $1.07 one year from now. Or you could convert the dollar today into 2.5DM (an exchange rate of $0.40 per DM implies that $1 is worth 2.5 DM) and invest in DM-denominated bonds to have 2.6DM one year from now. For you to break even, the 2.6DM would have to be worth $1.07 one year from now. So the break-even exchange rate is:

$$\frac{1.07}{2.6} \text{DM, or } 0.4115 \text{ per DM.}$$

22. You could take $10,000 out of your bank account and pay down your credit card balance. You would give up 4% in interest earnings ($400 per year) but you would save 18% per year in interest expenses ($1,800 per year). So the arbitrage opportunity is worth $1,800 - $400 = $1,400 per year.

23. $90 buys the same amount of gold (1 ounce) as 160 DM, so 1 DM should cost $90/160, or $0.5625.

24. The estimated value is:

$$108.50 \times \frac{7}{P/E \text{ ratio of 15.5}}$$