

TIME VALUE MONEY - PRACTICE PROBLEMS ©

tvm-pbs.doc

Written by Professor Gregory M. Burbage, MBA, CPA, CMA, CFM

Please observe all copyright laws

1. For each of the following cases, indicate (a) to what number of periods and (b) to what interest rate columns you would refer in looking up the table factor.

	<u>Number of Years Invested</u>	<u>Annual Rate</u>	<u>Compounded</u>
Future value of 1 table:			
Case A	8	6%	Annually
Case B	3	8%	Semiannually
Future value of an annuity:			
Case C	2	12%	Monthly
Case D	5	8%	Quarterly
Present value of 1:			
Case E	1	48%	Bi-monthly 2 times per month
Present value of an annuity:			
Case F	2	18%	Monthly

Problems 2-12

Drawing each problem and its respective cash flows will help you determine the type of problem and how to solve it. Therefore, for each problem, you should: (1) draw a timeline equal to the number of time periods indicated, (2) show the cash flows occurring at each time period as stated by the problem, and (3) put a question mark at the beginning of the timeline (present value problem) if you are trying to determine how much now, or the end of the timeline (future value problem) if you are trying to determine how much later.

2. You invested \$5,000 at 8% annual interest leaving the money invested without withdrawing any of the interest. How much would you have at the end of 12 years assuming the investment earns interest compounded annually?

3. You borrowed \$20,000 on July 1, 2005. This amount plus accrued interest at 12% per year, compounded quarterly, is to be repaid on July 1, 2010. How much will you have to repay on July 1, 2010?

4. You agreed to make annual sinking fund deposits (savings account deposits) of \$60,000 per year because you borrowed \$800,000 by issuing some bonds. Your deposits are made at the end of each year into an account paying 5% annual interest. What amount will be in the sinking fund at the end of 10 years? Will you have enough to pay back the bonds?

5. When your daughter Betty-Joe-Bob was born, you and your spouse invested \$7,000 in a savings account paying 8% interest. Each year, starting with her first birthday and ending on her eighteenth birthday, you plan to deposit \$1,000 into the same account. How much will be in the savings account on your daughter's 18th birthday (after the last deposit)?

6. What is the present value of \$10,000 due in 8 periods discounted at 10%?

7. You want to earn 18% per year, compounded semiannually, on an investment that will return \$200,000 eight years from now. What is the amount you should invest now to earn this rate of return?

8. What is the present value of \$10,000 to be received at the end of each 6 months, for 5 years, discounted at 8% per year?

9. You are considering investing in an annuity contract that will return \$2,000 at the end of each month for 3 years. What amount should you pay for this investment if it earns a 12% annual return?

10. Your company is about to issue \$100,000 of 6-year bonds paying a 10% interest rate (contract rate) with interest payable annually. The discount rate (market rate) for these securities is 10%. How much can your company expect to receive for the sale of these bonds?

11. Six months ago your company could have issued \$100,000 of 6-year bonds paying a 10% interest rate (contract rate) with interest payable annually. The discount rate (market rate) for such securities was 9%. How much could your company have received for the sale of these bonds?

12. If you wait for six months from now you could issue \$100,000 of 6-year bonds paying a 10% interest rate (contract rate) with interest payable annually. You think the discount rate (market rate) for such securities will be 11%. How much could you expect your company to receive for the sale of these bonds?