11.02 – Bond Types Name _____

Time Value of Money

1. You have an investment of $5,000 earning compound interest at 4% paid annually for 12 years. Determine the amount of the investment after 12 years.

2. Investment A has an annual interest rate of 3% and it will be worth $500 in 6 years. What is the present value of that investment?

Zero-Coupon Bonds

3. Basics: Find the price of a 5-year 4.4% zero-coupon bond with a face value of $1000.

4. Write a sentence to describe what's being invested, when it's being paid back, how much is paid back, etc. Show that you're clear on this transaction.

5. What is the price of a 7-year zero-coupon bond with an interest rate of 4% and a par value of $5000?

What is the price of a 8-year zero-coupon bond with an interest rate of 4% and a par value of $5000?

What is the price of a 9-year zero-coupon bond with an interest rate of 4% and a par value of $5000?

6. For each bond in #5 above, assume you bought the bond and held it to maturity. Determine your profit and your percent profit.

Profit: Profit: Profit:

% profit: % profit: % profit:

7. Notice that the interest rate and the par value for each bond was the same. The only difference was the term. Compare your % profits. Are they the same or different? Why does that make sense?

8. For the investor who's interested in maximizing profit (meaning just about everybody), what advice would you give about the term of their bonds?

But why is this difficult?

Coupon Bonds

9. Oracle sold 6-year 3.8% coupon bonds with total par value of $10 million. The bonds make payments annually.

Complete a cash flow diagram for the bonds with the interest payments and repayment of the principal:

Total invested:

Total repaid:

Creditor's total profit:

Profit %:

10. Determine the annual interest payment required to service a debt of 25,000 3-year $1000 face value 3.4% coupon bonds.

11. If a company could issue an 8-year 6% bond or a 6-year 8% bond and the face value is the same, which would require more in *total* interest expense over the life of the bond?

Comparison Shopping

12. Thompson and Balfour are both entering the bond market. Thompson buys a five-year, 6% coupon bond for a par value of $1000 that pays interest annually. Balfour buys a five year, zero coupon bond that has a par value of $1000.

Determine Thompson's profit and his % profit.

Determine the price Balfour will pay for his bond, his profit and his profit %.

Who earns more total profit (in dollar terms)?

Who earns a greater % profit?

Assume Balfour could have invested $1000 in zero-coupon bonds, meaning he'd invested an equal amount as Thompson. Determine how much total profit (in dollar terms) she would have made. (Cross-multiplying wouldn't be a bad idea here.) Now who made more money in absolute dollar terms?