Investment Word Problems

$A = I_i(1 + r)^t \quad \Longrightarrow \quad A = I_i(1 + \frac{r}{n})^{nt}$

A is the accumulated amount
I_i – initial amount,
r - the annual rate – $\frac{r}{n}$ is the interest rate per period
t - time – *nt* is the number of time compounded per year

If the interest rate is 6% annually, then being compounded twice per year, the rate is $\frac{6}{2}$ or 3% each time its being compounded. The number of times it will be compounded is nt, 2(1)

1. Bob wants to invest $3000 at 6% compounded annually for one year. How much is his initial investment worth after the first year?

2. Five years ago, Ted wanted to start a small business and borrowed $4500. He paid $6000 back. What was the interest annual rate that Ted paid?

3. Carlo car loan of $20,000 is at an interest rate of 6% that is compounded annually for 4 years. What is the total he would pay after 4 years?

4. Jessie invested in a company that she wants to be worth $90,000 in 10 years. She will be paid 5% interest on her initial investment that will be compounded every 6 months. What will her initial investment be?

5. Maria has a saving bond that will mature at $100,000 in two years. The account has an interest rate of 7.5% that is compounded every 6 months. What was her initial investment?

6. Emanuel wants to purchase a condo for $200,000 and make a one-time balloon payment in 5 years at 6% compounded monthly to pay off the loan, how much will he have to pay at that time?

7. Jackie was charged 6% interest compounded semi-annually on a bank loan of $7000 for an 8 year term. What did she have to pay to borrow the money over the 8 years?

8. Ted inherited $200,000 and invested it in an annuity that guarantees a 5% return that us compounded monthly for twenty years for his retirement. How much will his investment be worth when he ready to retire>