

Week in Review #6

Section F.1: Compound Interest

- Simple interest
 - interest is computed on the original principal only
 - $I = Prt$
 - $A = P(1 + rt)$
 - Discount loans
 - discount: $D = Mrt$
 - proceeds: $P = M - D = M(1 - rt)$
 - Effective rate of a discount loan
 - $r_{eff} = \frac{D}{Pt} = \frac{r}{1 - rt}$
1. Find the interest on a \$600 investment made for 2 years at a simple interest rate of 8% per year. What is the accumulated amount?
 2. How long will it take an investment to grow from \$500 to \$750 if the investment earns a simple interest rate of 8% per year?
 3. Determine the annual simple interest rate at which \$1500 will grow to \$1580 in 7 months.
 4. Jake has agreed to pay back a \$5,000 discount loan at the end of 9 months. The loan has an annual simple discount rate of 6%.
 - (a) What is the discount on this loan?
 - (b) How much money does Jake actually receive from the loan?
 5. Bob needs \$750 for his cellphone bill. He has taken out a discount loan so that he will have the money to pay off this bill. The loan has an annual discount rate of 9% and has to be paid off in 5 months. What is the maturity value of this loan?
 6. What is the effective rate on a discount loan that has an annual discount rate of 12% and the loan is to be paid off in 8 months?

Section F.2: Compound Interest

- interest is earned on the principal and on the interest
 - $A = P \left(1 + \frac{r}{m}\right)^{mt}$
 - Effective interest rate
 - $r_{eff} = 100 \left(1 + \frac{r}{m}\right)^m - 100$
 - calculator command: Eff(r,m)
 - present value
 - compound interest problems may be solved using the TVM Solver on the calculator.
7. One bank, A, advertises a nominal rate of 7.15% per year compounded semi-annually. a second bank, B, advertises a nominal rate of 7% per year compounded daily. What are the effective yields for each bank? Which bank has the best interest rate?
 8. \$3000 is invested at a rate of 8% per year compounded quarterly. What is the balance in the account at the end of six years?
 9. Bob deposits \$5000 into an account that pays 5.96% per year, compounded monthly. How much money will Bob have at the end of 4 months? How much interest did Bob earn?

10. You want to take a trip in 3 years that will cost \$18,000. How much should you deposit now into an account that earns 8% per year compounded daily so you will have enough for the trip.
11. You put \$2,000 into an account and 5 years later had \$8,450.50. If the account earned interest compounded monthly, what was the interest rate?
12. What interest rate would you get if you invest \$600 and three years later you have \$975 if the account is paid interest compounded quarterly?