

Week3

FIN 534 – Homework Chapter 4

1. A \$50,000 loan is to be amortized over 7 years, with annual end-of-year payments. Which of these statements is CORRECT?
- a. The annual payments would be larger if the interest rate were lower.
 - b. If the loan were amortized over 10 years rather than 7 years, and if the interest rate were the same in either case, the first payment would include more dollars of interest under the 7-year amortization plan.
 - c. The proportion of each payment that represents interest as opposed to repayment of principal would be lower if the interest rate were lower.**
 - d. The last payment would have a higher proportion of interest than the first payment.
 - e. The proportion of interest versus principal repayment would be the same for each of the 7 payments.

Correct answer: c

2. Which of the following statements is CORRECT?
- a. If you have a series of cash flows, each of which is positive, you can solve for I , where the solution value of I causes the PV of the cash flows to equal the cash flow at Time 0.
 - b. If you have a series of cash flows, and CF_0 is negative but each of the following CFs is positive, you can solve for I , but only if the sum of the undiscounted cash flows exceeds the cost.
 - c. To solve for I , one must identify the value of I that causes the PV of the positive CFs to equal the absolute value of the PV of the negative CFs. This is, essentially, a trial-and-error procedure that is easy with a computer or financial calculator but quite difficult otherwise.**
 - d. If you solve for I and get a negative number, then you must have made a mistake.
 - e. If CF_0 is positive and all the other CFs are negative, then you cannot solve for I .

Correct answer: c

3. Riverside Bank offers to lend you \$50,000 at a nominal rate of 6.5%, compounded monthly. The loan (principal plus interest) must be repaid at the end of the year. Midwest Bank also offers to lend you the \$50,000, but it will charge an annual rate of 7.0%, with no interest due until the end of the year. How much higher or lower is the effective annual rate charged by Midwest versus the rate charged by Riverside?

- a. 0.52%
- b. 0.44%
- c. 0.36%
- d. 0.30%**
- e. 0.24%

Correct answer: d it could also be worked using the conversion formula. We used the conversion formula. Nominal rate, Riverside 6.5% Nominal rate, Midwest 7.0% Periods/yr, Riverside 12 Periods/yr, Midwest 12
 $EFF\% \text{ Riverside} = (1 + (r_{NOM} / N))^N - 1$
 $EFF\% \text{ Midwest} = 7.00\%$
 Difference 0.30% 56.

4. Steve and Ed are cousins who were both born on the same day, and both turned 25 today. Their grandfather began putting \$2,500 per year into a trust fund for Steve on his 20th birthday, and he just made a 6th payment into the fund. The grandfather (or his estate's trustee) will make 40 more \$2,500 payments until a 46th and final payment is made on Steve's 65th birthday. The grandfather set things up this way because he wants Steve to work, not be a "trust fund baby," but he also wants to ensure that Steve is provided for in his old age. Until now, the grandfather has been disappointed with Ed, hence has not given him anything. However, they recently reconciled, and the grandfather decided to make an equivalent provision for Ed. He will make the first payment to a trust for Ed today, and he has instructed his trustee to make 40 additional equal annual payments until Ed turns 65, when the 41st and final payment will be made. If both trusts earn an annual return of 8%, how much must the grandfather put into Ed's trust today and each subsequent year to enable him to have the same retirement nest egg as Steve after the last payment is made on their 65th birthday?

- a. \$3,726**
- b. \$3,912
- c. \$4,107
- d. \$4,313
- e. \$4,528

Correct answer: a

5. John and Daphne are saving for their daughter Ellen's college education. Ellen just turned 10 at ($t = 0$), and she will be entering college 8 years from now (at $t = 8$). College tuition and expenses at State U. are currently \$14,500 a year, but they are expected to increase at a rate of 3.5% a year. Ellen should graduate in 4 years--if she takes longer or wants to go to graduate school, she will be on her own. Tuition and other costs will be due at the beginning of each school year (at $t = 8, 9, 10,$ and 11).

So far, John and Daphne have accumulated \$15,000 in their college savings account (at $t = 0$). Their long-run financial plan is to add an additional \$5,000 in each of the next 4 years (at $t = 1, 2, 3,$ and 4). Then they plan to make 3 equal annual contributions in each of the following years, $t = 5, 6,$ and 7 . They expect their investment account to earn 9%. How large must the annual payments at $t = 5, 6,$ and 7 be to cover Ellen's anticipated college costs?

- a. \$1,965.21
- b. \$2,068.64
- c. \$2,177.51
- d. \$2,292.12
- e. \$2,412.76**

Correct answer: e