**Chapter 5 in Class Exercise Part II Solution**

1. You deposit $5,000 in a saving account at 10% compounded annually. How much is your first year interest? How much is your second year interest?
2. 500, 500
3. 500, 550
4. 500, 600
5. 500, 650

Answer: B

First year: interest earned 5000\*10%=500; SO by the end of the first year, the account value is 5500.

Second year: interest earned 5500\*10%=550.

1. What is the future value of $5,000 invested for 3 years at 10% compounded annually?
2. 6,655
3. 6,000
4. 6,850
5. 6,255

Answer: A

abs(fv(10%, 3, 0, 5000)) = 6655

1. You just bought a TV for $518.4 on credit card. You plan to pay back of $50 a month for this credit card debt. The credit card charges you 12% of interest rate on the monthly basis. So how long does it take to pay back your credit card debt?
2. 9 month
3. 10 month
4. 11 month
5. 12 month

Answer: c

Nper(12%/12, -50, 518.4, 0) = 11 months

1. You are going to deposit certain amount in the next four years. Your saving account offers 5% of annual interest rate.

First year: $800

Second year: $900

Third year: $1000

Fourth year: $1200.

How much you can withdraw four years later?

1. 3429.31
2. 4168.35
3. 3900.00
4. 4329.85

Answer: B

Abs(fv(5%, 3, 0, 800)) + Abs(fv(5%, 2, 0, 900)) +Abs(fv(5%, 1, 0, 1000)) +1200 = 4168.35

Or,

NPV = npv(5%, 800, 900, 1000, 1200) = 3429.31

NFV = abs(fv(5%, 4, 0, 3429.31) = 4168.35

1. You are going to deposit certain amount in the next four years. Your saving account offers 5% of annual interest rate.

First year: $800

Second year: $900

Third year: $1000

Fourth year: $1200.

How much is the lump sum value as of today (NPV)?

1. 3429.31
2. 4168.35
3. 3900.00
4. 4329.85

Answer: A

NPV = npv(5%, 800, 900, 1000, 1200) = 3429.31

1. Ten years ago, you invested $1,000. Today it is worth $2,000. What rate of interest did you earn?   
   A. 7.29 percent  
   B. 6.97 percent  
   C. 7.03 percent  
   D. 7.18 percent  
    Answer: D

rate = rate(10, 0, 1000, -2000) = 7.18%

7. At 5 percent interest, how long would it take to triple your money?   
A. 22.52 years  
B. 16.64 years  
C. 28.41 years  
D. 23.28 years  
 Answer: A

Nper(5%, 0, 100,-300) =22.52 years

8. What is the effective annual rate if a bank charges you 12 percent compounded monthly?   
A. 12.00 percent  
B. 11.84 percent  
C. 12.68 percent  
D. 13.20 percent

Answer: C

EAR = effect(12%, 12) = 12.68%

9. Your father invested a lump sum 16 years ago at 8% interest for your education. Today, that account worth $50,000.00. How much did your father deposit 16 years ago?   
A. $15,329.13  
B. $13,157.41  
C. $14594.50  
D. $15,310.06

Answer:

ABS(pv(8%, 16, 0, 50000)) =14594.50

10. You are borrowing $300,000 to buy a house. The terms of the mortgage call for monthly payments for 30 years at 3% interest. What is the amount of each payment?   
A. $1217.05  
B. $1311.14  
C. $1264.81  
D. $1232.86  
 Answer: C

Abs(pmt(3%/12, 30\*12, 300000,0)) = 1264.81

11. You deposit $200 at the beginning of each month into your saving account every month. After two years (24 deposits total), your account value is $6,000. Assuming monthly compounding, what is your monthly rate that the bank provides?

a. 1.92%

b. 2.12

c. 2.40%

d. 1.74%

Answer: D

Rate(24, 200, 0, -6000, 1) = 1.74%

1. You want to buy a fancy car. For this goal, you plan to save $5,500 per year, beginning immediately. You will make 4 deposits in an account that pays 8% interest. Under these assumptions, how much will you have 4 years from today?

a. $26,112

b. $26,918

c. $27,763

d. $26,766

Answer: D

Abs(fv(8%, 4, 5500,0,1)) =$26,766

1. Citi card is giving you a good deal. You can transfer your balance from your current credit card to Citi new card with $50 balance transfer fee. The new card charges at 5% a year. But your old card charges at 12% a year. Your balance in your old card is $5,000. If you can afford to pay back to the credit card of $250 a month. How much quicker does it take you to pay back your debt with the new card? (Hint: for the new card, your debt = 5000+50=5050; Assume monthly compounding by credit card companies).
   1. 3.95 months
   2. 2.81 months
   3. 3.14 months
   4. 5.00 months

Answer: For new card, it takes nper(5%/12, 250, -5050,0) = 21.15 months

For old car, it takes nper(12%/12, 250, -5000,0) = 22.43 months

So it is 22.43-21.15=1.28 month shorter. None of the answers are correct. Sorry for the mistake.

1. Your girlfriend just won the Florida lottery. She has the choice of $40,000,000 today or a 20-year annuity of $2,850,000, with the first payment coming one year from today. If the mutual fund of hers provides 4% of return each year for the next 20 years, which payment option is more attractive to her?

a. $40,000,000

b. 20-year annuity of $1,850,000

c. The two are the same

d. Could not tell

Answer: A

For the annuity, the pv = abs(pv(4%, 20, 2850000,0)) = 38,732,430.08 < 40,000,000

So should choose 40m today