

Multiple Choice

1	D	0
2	E	0
3	C	0
4	B	0
5	B	0
6	C	0
7	D	0
8	D	0
9	D	0
10	A	0

Total missed 0

Points off 0

YOUR NAME HERE

Problem 2 (12 points) You want to retire in 30 years. Currently, you have \$100,000 invested in a bond account and \$200,000 invested in a stock account. The bond account will earn a 7 percent EAR and the stock account will earn an 11 percent EAR. You also plan to deposit \$750 per month for the next 15 years into the stock account and then \$1,000 per month for the last 15 years into your bond account. All deposits are in real terms. When you retire you plan to move all of your money into an account that earns an 8.5 percent EAR. You plan to live for 25 years after you retire. Additionally, at the end of your retirement you want to leave \$1,000,000 for your grandchildren in today's dollars. All rates are nominal. Over the next 55 years, you expect inflation to be 3.5 percent. How much can you withdraw each month in real terms? What is the amount of the check your grandchildren will receive?

Years until retirement		30
Current investments		
Bond account	\$	100,000
Stock account	\$	200,000
Bond account return		7%
Stock account return		11%
Deposit into stock account	\$	750
Years for stock deposit		15
Deposit into bond account	\$	1,000
Years for bond deposit		15
Retirement return		8.5%
Years in retirement		25
Amount for grandchildren	\$	1,000,000
Inflation		3.50%

	Bond account	Stock account	Retirement account
Real EAR	3.3816%	7.2464%	4.8309%
Real APR	3.3303%	7.0163%	4.7271%

Stock account when deposits stop \$ 809,233.99

Bond account when deposits start \$ 164,684.00

At retirement:

Stock account value	\$	2,311,072.39
Bond account value		504,280.28
PV of inheritance		(307,443)
TOTAL	\$	2,507,909.19

Withdrawals **\$ 14,265.07**

Amount of inheritance **\$ 6,633,141.14**

YOUR NAME HERE

Problem 3 (8 points) Your grandparents purchased their house in 1968 for \$7,800. They were amazed when they recently sold the house for \$295,000 and feel that their return was tremendous. Of course, these are the same grandparents who complain that a candy bar that sold for \$.25 when they bought the house now costs \$1.30. What was the real selling price of the house in 1968 dollars?

Current year		2017
Year purchased		1968
Original price	\$	7,800
Price sold for today	\$	295,000
Original candy bar price	\$	0.25
Current candy bar price	\$	1.30

Years passed	49
Nominal increase	7.70%
Inflation rate	3.42%
Real increase	4.13%
Real price in 1968 dollars	\$ 56,730.77

YOUR NAME HERE

Problem 4 (9 points) Dr. Joe Schmo is a finance professor at a small Southern liberal arts university. A student who has performed poorly in the introductory finance class has offered to pay Dr. Schmo for a better grade. Dr. Schmo presented the student with this agreement to sell a better grade: Since he would be fired from his position, he would lose his salary and benefits. His salary is \$63,000 per year, paid in equal payments at the end of the each month. His salary is expected to keep pace with inflation. His benefits amount to \$25,000 per year, and the benefit payments occur at the beginning of each year. The benefits will also increase at the rate of inflation. He expects to work for another 20 years. Assume the required return is 7.1 percent nominal and the inflation rate is 3.4 percent. All rates are effective annual rates. If Dr. Schmo is willing to sell the student a better grade if the student pays the present value of the future lost salary and benefits, how much will the student have to pay for a better grade?

Annual salary	\$	63,000
Months per year	\$	12
Annual benefits	\$	25,000
Years	\$	20
Required return		7.1%
Inflation rate		3.4%

Real rate (EAR) 3.578%
Real rate (APR) 3.521%

Present value of salary \$ 903,556.63

Present value of benefits \$ 365,429.24

Amount to pay for grade **\$1,268,985.86**

YOUR NAME HERE

Problem 5 (11 points) You are considering the purchase of an apartment building that generated \$325,000 over the past year in cash flows to the owner. The cash flows are expected to keep pace with the inflation rate of 3.3 percent and occur at the end of each year forever. If you require an 11 percent nominal return on your investment, how much will you pay for the building today?

Annual cash flow	\$	325,000
Inflation rate		3.3%
Required return		11%

Real return 7.45%

Value of building **\$ 4,360,064.94**

Suppose instead that the apartment building will only last for 20 years until it must be torn down. At that time, the land can be sold for \$1.5 million net of demolition costs in that year's dollars. How much will you pay for the building now?

Years for cash flows		20
Land value after demolition	\$	1,500,000

Value of cash flows \$ 3,324,827.87

Value of land today \$ 186,050.86

Value of building **\$ 3,510,878.73**

YOUR NAME HERE

Problem 6 (9 points) A financial advisor is trying to sell you a short-term increasing perpetuity. One year from today you will receive \$10,000, and the payments will increase at \$10,000 per year. Thus, in 2 years you will receive \$20,000, in 3 years you will receive \$30,000, and so on. When the payments reach \$70,000 per year, they will remain constant. If the interest rate is a 3.6 percent APR compounded daily, how much should you pay for this perpetuity today?

First payment	\$	10,000
Annual increase	\$	10,000
Maximum cash flow	\$	70,000
APR		3.6%
Compounding periods per year		365

EAR 3.665%

PV of perpetuity \$ 1,909,750.32

	Year	Cash flow
	1	\$ 10,000.00
	2	\$ 20,000.00
	3	\$ 30,000.00
	4	\$ 40,000.00
	5	\$ 50,000.00
	6	\$ 1,969,750.32
Value today		\$ 1,718,699.98

YOUR NAME HERE

Problem 7 (10 points) The most recent financial statements a company are shown below. The company expects that sales will grow 15 percent next year. Interest expense, depreciation, the tax rate, notes payable, long-term debt, and the dividend payout rate will remain constant. COGS, other expenses, current assets, and accounts payable increase spontaneously with sales. The firm is operating at 86 percent capacity. If fixed assets are required, the company must purchase \$15 million in fixed assets. Show the pro forma financial statements for next year. What is the EFN for next year? The tax rate is 40 percent.

Tax rate		40%		
Capacity utilization		86%		
Sales increase		15%		
Fixed asset purchase amount	\$	15,000,000		
Sales	\$	126,000,000		
Cost of goods sold		94,300,000		
Other expenses		16,200,000		
Depreciation		7,500,000		
EBIT	\$	8,000,000		
Interest		2,900,000		
EBT	\$	5,100,000		
Taxes (40%)		2,040,000		
Net income	\$	3,060,000		
Dividends	\$	1,400,000		
Additions to retained earnings		1,660,000		
	Assets		Liabilities & Equity	
Current assets			Current liabilities	
Cash	\$	957,000	Accounts payable	\$ 1,050,000
Accounts receivable		1,130,000	Notes payable	1,275,000
Inventory		1,959,000	Total	\$ 2,325,000
Total	\$	4,046,000	Long-term debt	\$ 19,400,000
Fixed assets			Owners' equity	
Net plant and equipment	\$	55,800,000	Common stock and paid-in surplus	\$ 5,500,000
			Accumulated retained earnings	32,621,000
			Total	\$ 38,121,000
Total assets	\$	59,846,000	Total liabilities and owners' equity	\$ 59,846,000

