Spring Semester Financial Functions Practice #1 Annotated Answers

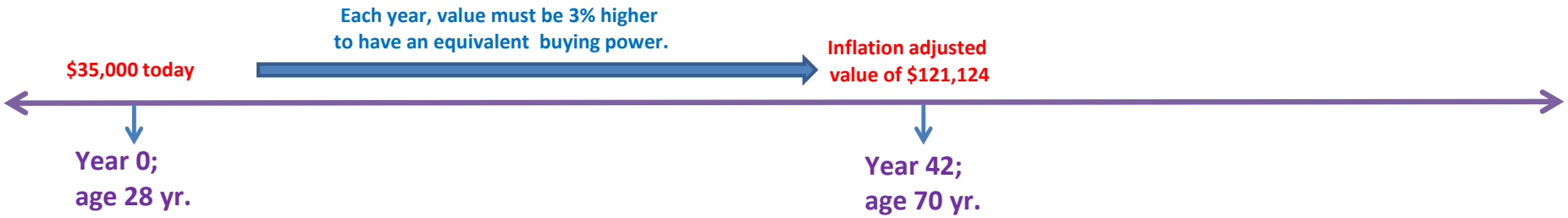
If you understand these problems, you'll do great on Spring Midterm #1.

#1A DETERMINE TARGET RETIREMENT INCOME

Output = FV "inflation-adjusted value when you reach the age of 70 years"

($121,124)

Inputs: n = 42 years (70-28); PV = $35,000 ("current value . . . In today's dollars"); rate = 3% ("inflation rate")



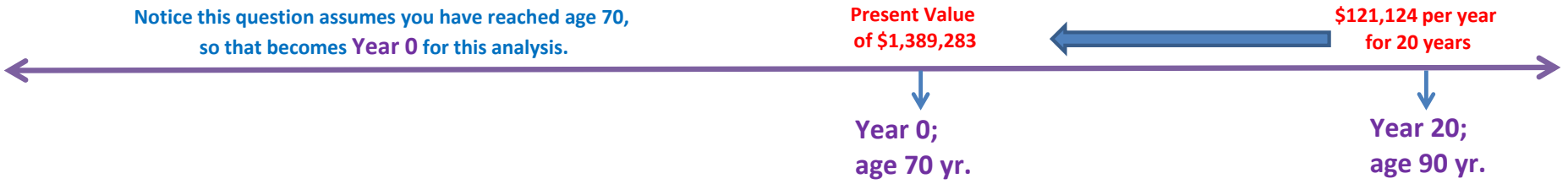
#1B DETERMINE TARGET RETIREMENT SAVINGS

Output = PV "How much savings " (Note this question assumes you are now 70 years old, so "present" is now Year 42.)

($1,389,283)

Inputs: PMT = $121,124 ("target income per year"); n = 20 ("you plan to live another 20 years'); rate = 6%

NOTICE: PER YEAR always is a PMT

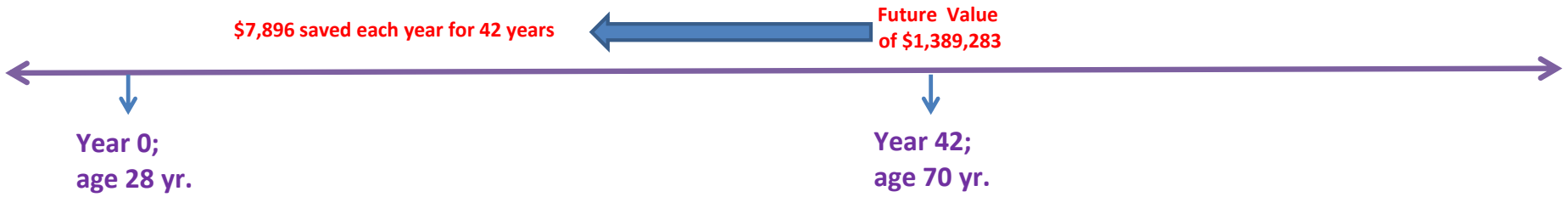


#1C **DETERMINE REQUIRED ANNUAL SAVINGS**

Output = PMT ("how much must be saved each year") **NOTICE: PER YEAR always is a PMT**

($7,896)

Inputs: FV = $1,389,283 "(target retirement savings goal)"; n = 42 years (70 - 28); rate = 6%



#2A No Excel Financial Functions required this first part, just multiply the "salary at retirement" by 70%.

Salary at retirement	**$75,000**
	X 70%
Annual Retirement Payment	**$ 52,500**

#2B Output = PV "how much must the company have saved"

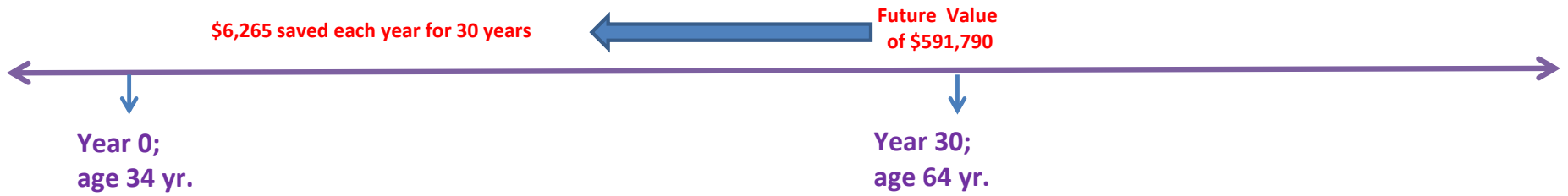
($591,790)

Inputs: PMT = $52,500 ("annual payment"); rate = 7%; n = 23 years (87 - 64)

#2C Output = PMT "how much must the company deposit every year" **NOTICE: EVERY YEAR = PMT**

($6,265)

Inputs: FV = $591,790 ("savings target"); n = 30 years ("will have worked 30 years at the company"); rate = 7%



#2D No Excel Financial Functions required this first part, just subtract $2,000 from the fixed annual benefit cost ("how much must the company deposit every year").

Fixed Benefit Annual Cost	**$6,265**
	less $2,000
Annual Retirement Payment	**$ 4,265**

#2 BONUS

The significant change in this scenario is that the company will have to pay the emploee $52,500 for 32 years (87 - 55) rather than 23 years.

The first step is to recalculate the change in the total amount that must be saved by the company.

Output = PV "how much must the company have saved"

($663,944)

Inputs: PMT = $52,500 ("annual payment"); rate = 7%; n = 32 years (87 - 55)

The second step is to recalculate the annual amount that must be saved to attain this savings target.

Output = PMT "how much must the company deposit every year" **NOTICE: EVERY YEAR = PMT**

($7,029)

Inputs: FV = $663,944 ("savings target"); n = 30 years ("will have worked 30 years at the company"); rate = 7%

THEREFORE, the company must save $7,029 per year to meet its obligatioins.

#3

Output = PMT "monthly payment" **REMEMBER: FOR ALL LOANS, DO MONTHLY**

($2,021)

Inputs: PV = $450,000 (loan amount); rate = 3.5%/12; n = 30*12

#4

Output = PV "how much should an investor pay"; always assumes the investor will buy the bond today.

($21,773)

Inputs: FV = $20,000; rate = 5%; n = 12 years; PMT = $1,200

#5

Output = PV "how much can you borrow", loan amount

($346,794)

Inputs: PMT = $85,000 per year * 35% / 12;
rate = 3.5%/12; n = 15*12

NOTE: *35% allocates annual income to annual payment
Dividing by 12 converts annual payment to monthly payment

#6

Output = NPV ("net present value")

$778,662

Input:			
	Year One	$60,000	Rate = 9%
	Year Two	$67,000	
	Year Three	$76,000	
	Year Four	$859,000	

4th year income includes income from operations of $79,000
+ $780,000 from proceeds of selling property = $859,000

#7

Output = IRR ("intenral rate of return")

10.2%

Note: Before the clock starts (time 0), you buy the property for $750,000.

Input:	Year 0	-$750,000
	Year One	$60,000
	Year Two	$67,000
	Year Three	$76,000
	Year Four	$859,000

Input the purchase price as a negative number, $ going out .

BE SURE TO ROUND % ANSWER TO NEAREST TENTH

NO input required for "Guess" in function box.

#8

	Year 1	Year 2	Year 3	Year 4	
Annual Gross Income					
One-Bedroom Units	$91,800	$98,226	$105,102	**$112,459**	**Increase each year gross income 7% by multiplying by 1.07**
Two-Bedroom Units	$66,000	$70,620	$75,563	**$80,853**	**Increase each year gross income 7% by multiplying by 1.07**
Laundry income	$750	$780	$811	**$844**	**Increase each year gross income 4% by multiplying by 1.04**
Total	$158,550	$169,626	$181,476	**$194,155**	**Add the three sources of income**
Vacancy & Collection Loss (6%)	$7,928	$8,481	$9,074	**$9,708**	**Multiply each year annual gross income by 5%**
Annual Effective Gross Income	$150,623	$161,145	$172,403	**$184,448**	**Subtract vacancy and collection loss from annual gross income for each year**
Annual Expenses					
Real Estate Taxes	$10,000	$10,200	$10,404	**$10,612**	**Increase each year expense 2% by multiplying by 1.02**
Insurance	$4,000	$4,240	$4,494	**$4,764**	**Increase each year expense 6% by multiplying by 1.06**
Utilties	$30,000	$32,100	$34,347	**$36,751**	**Increase each year expense 7% by multiplying by 1.07**
Maintenance	$8,000	$8,320	$8,653	**$8,999**	**Increase each year expense 4% by multiplying by 1.04**
Reserves/Other	$4,000	$4,160	$4,326	**$4,499**	**Increase each year expense 4% by multiplying by 1.04**
Total	$56,000	$59,020	$62,225	**$65,626**	**Add the five sources of expenses for each year.**
Annual Net Income	$94,623	$102,125	$110,178	**$118,822**	**Subtract total expenses from effective gross income for each year**