Spring Semester Financial Functions Practice #3 Annotated Answers

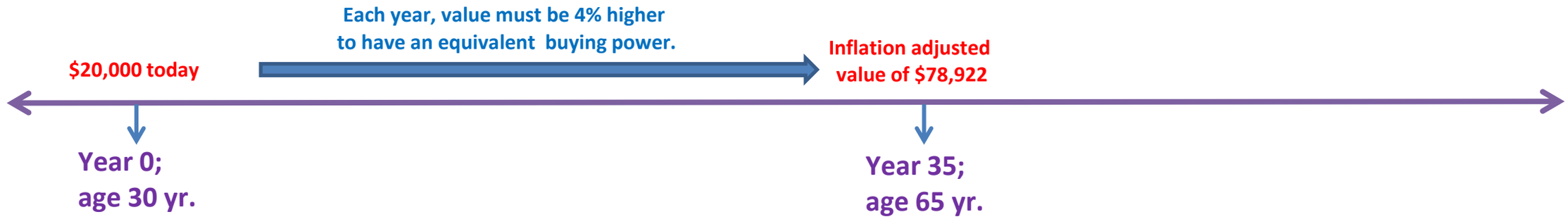
If you understand these problems, you'll do great on Spring Midterm #1.

#1A DETERMINE TARGET RETIREMENT INCOME

Output = FV "inflation-adjusted value when you reach the age of 65 years"

($78,922)

Inputs: n = 35 years (65-30); PV = $20,000 ("current value . . . In today's dollars"); rate = 4% ("inflation rate")



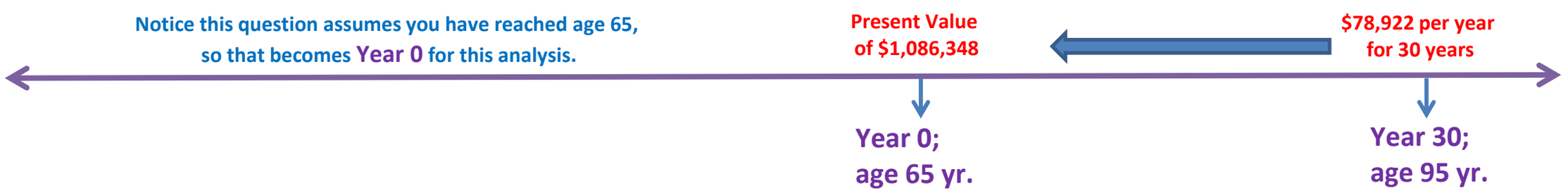
#1B DETERMINE TARGET RETIREMENT SAVINGS

Output = PV "How much savings " (Note this question assumes you are now 65 years old, so "present" is now Year 35.)

($1,086,348)

Inputs: PMT = $78,922 ("target income per year"); n = 30 ("you plan to live another 30 years'); rate = 6%

NOTICE: PER YEAR always is a PMT



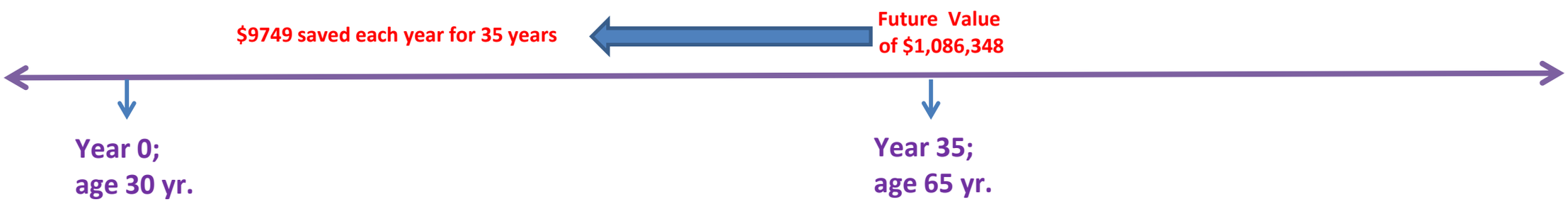
#1C **DETERMINE REQUIRED ANNUAL SAVINGS**

Output = PMT ("how much must be saved each year")

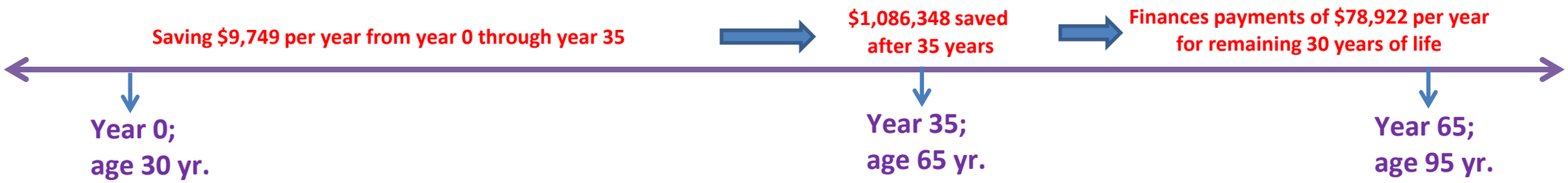
NOTICE: PER YEAR always is a PMT

($9,749)

Inputs: FV = $1,086,348 "(target retirement savings goal)"; n = 35 years (65 - 30); rate = 6%



Timeline Conclusions For Question One



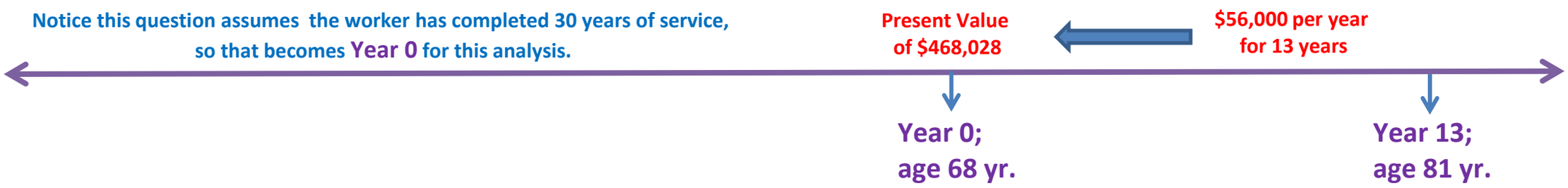
#2A No Excel Financial Functions required this first part, just multiply the "salary at retirement" by 70%.

Salary at retirement	**$80,000**
	X 70%
Annual Retirement Payment	**$ 56,000**

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

($468,028)

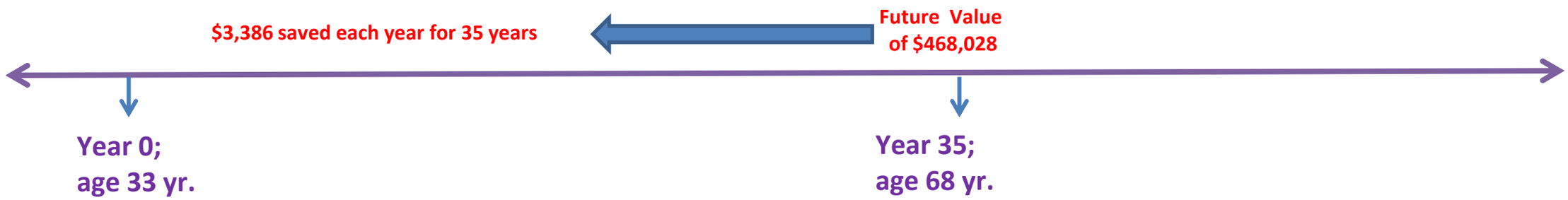
Inputs: PMT = $56,000 ("annual payment"); rate = 7%; n = 13 years (81 - 68)



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

($3,386)

Inputs: FV = $468,028 ("savings target"); n = 35 years ("will have worked 35 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	**$3,386**
	less $2,000
Annual Retirement Payment	**$ 1,386**

#2 BONUS

The significant change in this scenario is that the company will have to pay the emploee $56,000 for 21 years (81 - 60) rather than 13 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"

($606,790)

Inputs: PMT = $56,000 ("annual payment"); rate = 7%; n = 21 years (81 - 60)

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**

($4,389)

Inputs: FV = $606,790 ("savings target"); n = 35 years ("will have worked 35 years at the company"); rate = 7%

THEREFORE, the company must save $4,389per year to meet its obligatioins.

#3

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

($2,245)

Inputs: PV = $500,000 (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.

($32,433)

Inputs: FV = $30,000; rate = 4%; n = 10 years; PMT = $1,500

#5

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

($487,145)

Inputs: PMT = $75,000 per year * 35% / 12;
rate = 3.5%/12; n = 30*12

NOTE: $75,000*35% allocates annual income to annual payment
Dividing by 12 converts annual payment to monthly payment

#6

Output = NPV ("net present value")

$1,330,283

Input:	Year One	$90,000	Rate = 7%
	Year Two	$97,000	
	Year Three	$106,000	**4th year income includes income from operations of $109,000**
	Year Four	$1,409,000	**and $1,300,000 sale price**

#7

Output = IRR ("internal rate of return")

10.1%

Input:	Year 0	-$1,200,000
	Year One	$90,000
	Year Two	$97,000
	Year Three	$106,000
	Year Four	$1,409,000

Note: Before the clock starts (time 0), you buy the property for $1,200,000.

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	$68,400	$71,820	$75,411	$79,182	**Increase each year gross income 5% by multiplying by 1.05**
Two-Bedroom Units	$100,800	$105,840	$111,132	$116,689	**Increase each year gross income 5% by multiplying by 1.05**
Laundry income	$750	$810	$875	$945	**Increase each year gross income 8% by multiplying by 1.08**
Total	$169,950	$178,470	$187,418	$196,815	**Add the three sources of income**
Vacancy & Collection Loss (5%)	$8,498	$8,924	$9,371	$9,841	**Multiply each year annual gross income by 5%**
Annual Effective Gross Income	$161,453	$169,547	$178,047	$186,974	**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	$3,000	$3,180	$3,371	$3,573	**Increase each year expense 6% by multiplying by 1.06**
Utilties	$24,000	$25,680	$27,478	$29,401	**Increase each year expense 7% by multiplying by 1.07**
Maintenance	$9,000	$9,540	$10,112	$10,719	**Increase each year expense 6% by multiplying by 1.06**
Reserves/Other	$3,000	$3,120	$3,245	$3,375	**Increase each year expense 4% by multiplying by 1.04**
Total	$49,000	$51,720	$54,610	$57,680	**Add the five sources of expenses for each year.**
Annual Net Income	$112,453	$117,827	$123,437	$129,294	**Subtract total expenses from effective gross income for each year**