CPA Intermediate Financial Functions Practice Annotated Answers
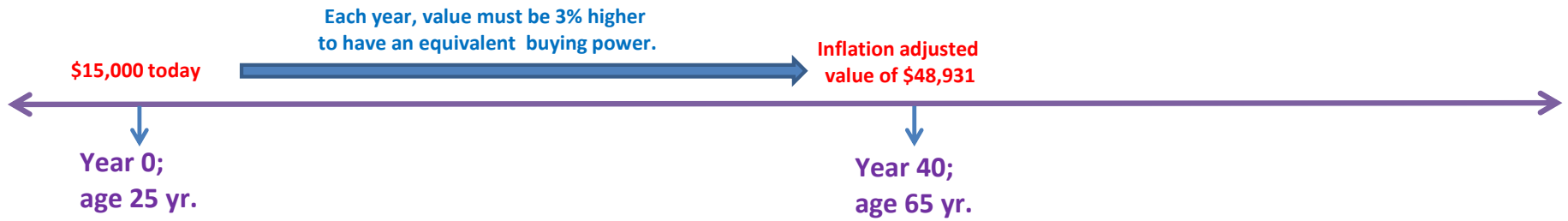
If you understand these problems, you'll do great on Spring Midterm #1.

#1A   DETERMINE TARGET RETIREMENT INCOME

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

($48,931)

Inputs: n = 40 years (65-25); PV = $15,000 ("current value . . . In today's dollars"); rate = 3% ("inflation rate")

**Each year, value must be 3% higher
to have an equivalent buying power.**

$15,000 today

**Inflation adjusted
value of $48,931**

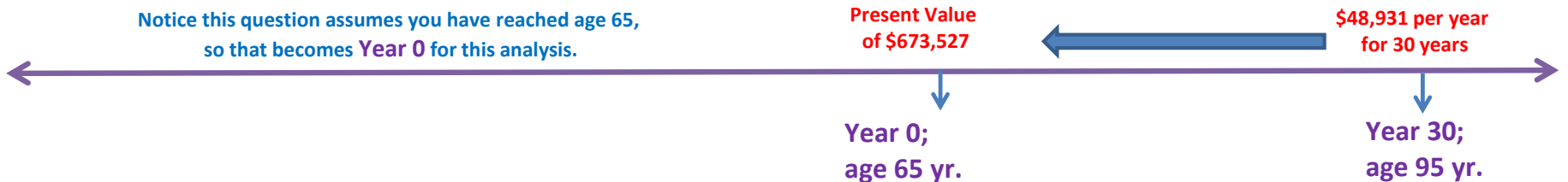**Year 0;
age 25 yr.**

**Year 40;
age 65 yr.**

#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 40.)
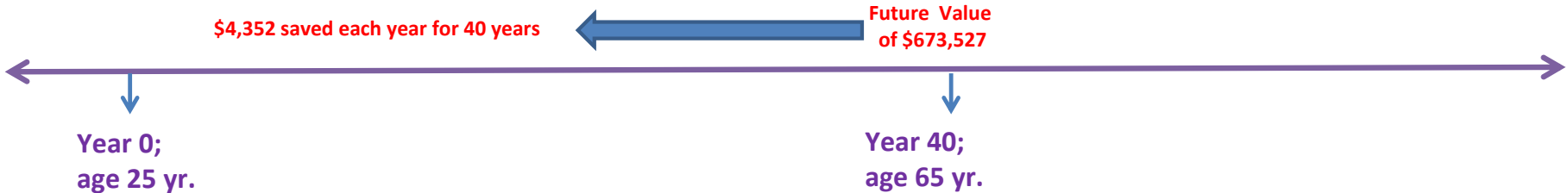
($673,527)

Inputs: PMT = $48,931 ("target income per year"); n = 30 ("you plan to live another 30 years'); rate = 6%   **NOTICE: PER YEAR always is a PMT**
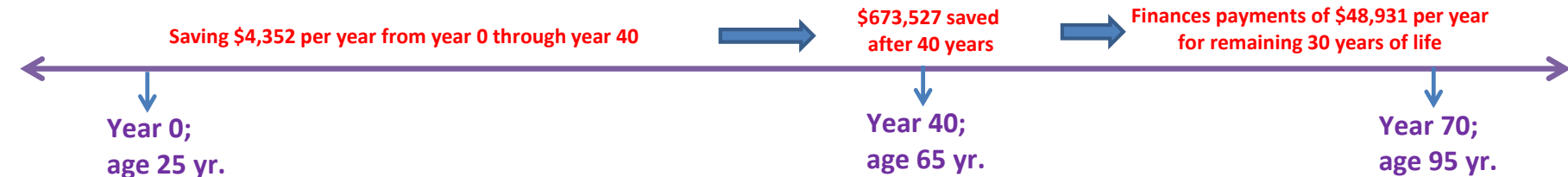
**Notice this question assumes you have reached age 65,
so that becomes Year 0 for this analysis.**

**Present Value
of $673,527**

**$48,931 per year
for 30 years**

**Year 0;
age 65 yr.**

**Year 30;
age 95 yr.**

	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P

16 | **#1C** DETERMINE REQUIRED ANNUAL SAVINGS

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

18 **($4,352)**

19 Inputs: FV = $673,527 "(target retirement savings goal)"; n = 40 years (65 - 25); rate = 6%

$4,352 saved each year for 40 years ← **Future Value of $673,527**

Year 0; age 25 yr.   **Year 40; age 65 yr.**

Timeline Conclusions For Question One

Saving $4,352 per year from year 0 through year 40 → **$673,527 saved after 40 years** → **Finances payments of $48,931 per year for remaining 30 years of life**

Year 0; age 25 yr.   **Year 40; age 65 yr.**   **Year 70; age 95 yr.**

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28 | **#2A** No Excel Financial Functions required this first part, just multiply the "salary at retirement" by 70%.

30 Salary at retirement $60,000

31 X 70%

32 Annual Retirement Payment $ 42,000

	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P
36	**#2B**				Output = PV "how much must the company have saved"											
37		**($468,641)**														
38					Inputs:	PMT = $42,000 ("annual payment"); rate = 6%; n = 19 years (83 - 64)										

Notice this question assumes the worker has completed 30 years of service, so that becomes Year 0 for this analysis.

Present Value of $468,641 ⬅ **$42,000 per year for 19 years**

Year 0; age 64 yr.

Year 19; age 83 yr.

	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P
41	**#2C**				Output = PMT "how much must the company deposit every year"					**NOTICE: EVERY YEAR = PMT**						
42		**($5,928)**														
43					Inputs:	FV = $468,641 ("savings target"); n = 30 years ("will have worked 30 years at the company"); rate = 6%										

$5,928 saved each year for 30 years ⬅ **Future Value of $468,641**

Year 0; age 34 yr.

Year 30; age 64 yr.

	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P
47	**#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").														
49				**Fixed Benefit Annual Cost**					**$5,928**							
50									**less $2,000**							
51				**Annual Retirement Payment**					**$ 3,928**							

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	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P
54	**#2 BONUS**			The significant change in this scenario is that the company will have to pay the emploee $42,000 for 28 years (83 - 55) rather than 19 years.												
55				**The first step is to recalculate the change in the total amount that must be saved by the company.**												
56																
57				Output = PV "how much must the company have saved"												
58		**($563,059)**														
59				Inputs: PMT = $42,000 ("annual payment"); rate = 6%; n = 28 years (83 - 55)												
60																
61				**The second step is to recalculate the annual amount that must be saved to attain this savings target.**												
62																
63				Output = PMT "how much must the company deposit every year"					**NOTICE: EVERY YEAR = PMT**							
64		**($7,122)**														
65				Inputs: FV = $563,059 ("savings target"); n = 30 years ("will have worked 30 years at the company"); rate = 6%												
66				**THEREFORE, the company must save $7,122 per year to meet its obligatioins.**												
67																
68	**#3**			Output = PMT "monthly payment"					**REMEMBER: FOR ALL LOANS, DO MONTHLY**							
69		**($1,572)**														
70				Inputs: PV = $350,000 (loan amount); rate = 3.5%/12; n = 30*12												
71																
72																
73	**#4**			Output = PV "how much should an investor pay"; always assumes the investor will buy the bond today.												
74		**($16,221.34)**														
75				Inputs: FV = $20,000; rate = 7%; n = 16 years; PMT = $1,000												
76																
77																
78	**#5**			Output = PV "how much can you borrow", loan amount												
79		**($377,144.89)**														
80				Inputs: PMT = $95,000 per year * 35% / 12;					**NOTE: *35% allocates annual income to annual payment**							
81				rate = 3.9%/12; n = 15*12					**Dividing by 12 converts annual payment to monthly payment**							
82																
83																
84	**#6**			Output = NPV ("net present value")												
85		**$944,464.67**														
86				Input: Year One		$80,000		Rate = 8%							
87				Year Two		$87,000										
88				Year Three		$96,000		**4th year income includes income from operations of $99,000**								
89				Year Four		$979,000		**+ $880,000 from proceeds of selling property = $979,000**								
90													**Business Statistics Mr. Nelson 1/1/2013**			

	A	B	C	D	E	F	G	H	I
91	**#7**			Output = IRR ("intenral rate of return")					
92		**4.1%**						**Note: Before the clock starts (time 0), you buy the property for $875,000.**	
93				Input:	Year 0	-$1,075,000		**Input the purchase price as a negative number, $ going out .**	
94					Year One	$80,000			
95					Year Two	$87,000		**BE SURE TO ROUND % ANSWER TO NEAREST TENTH**	
96					Year Three	$96,000		**NO input required for "Guess" in function box.**	
97					Year Four	$979,000			
98									
99									

#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 (5%)		$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

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