Client Circumstances

Rafe (age 52) and Anna Karlsson (age 49) are new financial planning clients who live in Highlands Ranch, Colorado. They have been married for 26 years, and they raised to two children, Stephen (age 25) and Gwen (age 23). Rafe and Anna realize that they are not adequately saving for retirement and seek your planning assistance.

Rafe is a business executive for a mid-sized firm. In addition to his annual salary, the firm offers numerous employee benefits, including matching dollars on this 401k plan (4% of salary), health insurance, $50,000 group term life, short-term disability (3 months), and an annual bonus. He is quite satisfied with his professional path and anticipates working there until retirement at age 67.

Anna and her long-time friend Freja are co-owners of a home care business that they started eight years ago. The company, which is structured as a partnership, offers services to elderly clients who need assistance with activities of daily living, including meal preparation, medication reminders, home shopping and light housekeeping. Their client base has grown steadily (mostly by referrals), although managing fluctuating cash flows and hiring/retaining reliable part time help has been a challenge. Currently they employ six part-time employees and sponsor a SIMPLE-IRA retirement plan.

Goals and Objectives:

1. Rafe intends to retire from his full-time job and file for Social Security Benefits when he reaches full retirement age. Anna intends to retire at the same time as her husband and immediately file for her Social Security Benefits.
2. Develop a retirement income savings plan that will fully support their inflation-adjusted annual retirement income needs.

Statement of Net Worth:

The following statement of net worth summarizes their assets and liabilities as of last month.

Statement of Net Worth

Assets		Liabilities	
Short-term Assets		*Short-term Debt*	
Checking account	3,600	Visa	5,680
Savings account	13,200	Master Card	8,440
Certificate of deposit	20,400		
Cash value life	16,400		
		Long-term Debt	
Retirement Account		Auto Loan (Honda)	23,896
SIMPLE-IRA (Anna)	32,100	Home Mortgage	399,352
Traditional IRA (Anna)	72,100	Home Equity Loan	13,576
401k Profit Share (Rafe)	91,500		
Traditiional IRA (Rafe)	65,400	**Total Liabilities**	**450,944**
Tangible Assets			
Home	852,000	**Net worth**	**791,256**
Personal Property			
Auto (Honda Civic)	25,100		
Auto (Ford 250)	12,400		
Personal assets	38,000		
Net worth	**1,242,200**		

Footnotes to the Statement of Net Worth

- The cash equivalents include a bank checking and savings account. The checking account earns no interest, and the savings account earns 0.5% interest.

- Certificate of deposit yield a 3.2% annual percentage rate (APR), and it matures in four months. Anna is the sole owner of the CD. It matures in nine months.
- Anna is the owner of a $100,000 whole life policy. Rafe is the primary beneficiary, and the children are the contingent co-beneficiaries.
- Home was purchased in joint tenancy with right of survivorship (JTWRS) The current fair market value of the home is $852,000.
- The Kelly Blue Book value of the Honda Civic is $25,100
- The Kelly Blue Book value of the Ford 250 is $12,400
- The cost of the Visa credit card debt is 18.8%. The Master card charges 20.5%. The couple made only minimum payments last year.
- The home mortgage is a 20-year, $530,000, 4.875% loan taken out seven years ago. The monthly payments are $3,461.27. The remaining balance is $399,352.
- The home equity loan is for 10-years. The original loan amount was for $20,000 and the interest rate is 6.8%. The loan was taken out four years ago to finance the cost of a home renovation. The monthly payment is $230.16, and the current balance is $13,576.
- The $28,000 auto loan on the Honda Civic is for six years at an annual rate of 5.0%. There are five years remaining on the loan. The monthly payment is $450.94, and the current balance is $23,896.
- The Ford 250 was paid off five years ago.

Cash Flow Statement:

The following cash flow statement shows their income and expenses from last year.

Income and Expenses	
Cash Inflows (annual)	
Salary (Rafe)	125,000
Partnership Income (Anna)	48,000
Interest	719
total	173,719
Cash Outflows (annual)	
Mortgage payment	41,535
Property tax	5,996
Home insurance	3,175
Home equity loan	2,762
Auto payment (Honda Civic)	5,411
Auto repair, gas, etc.	5,300
Auto insurance	3,200
Credit card payments	3,222
Utilities	4,080
Food	9,800
Laundry/dry cleaning	1,100
Clothing	1,200
Miscellaneous health	1,600
Miscellaneous home expenses	1,500
FICA	12,441
Federal income tax	22,739
State income tax	6,425
Entertainment	1,500
Miscellaneous spending	1,000
Vacations	5,000
Charitable contributions	500
Gift (Stefen)	10,000
Gift (Gwen)	10,000
IRA contribution (Anna)	7,000
IRA contribution (Rafe)	7,000
	(173,486)
Surplus (deficit)	233

Footnotes to the Statement of Cash Flows

- Anna's FICO credit score is 780 and Rafe's credit score is 750.
- The gifts to the children are intended to help repay their student loan debt.

Part 1: SWOT Analysis

Question 1

What are the strengths, weaknesses, opportunities, and threats of the current retirement plan? (In responding to this question, you should discuss both financial and non-financial issues impacting their plan, including retirement risks relevant to their situation)

For Rafe and Anna, we saw lots of strengths. They have already saved up $261,100 through their IRA's and employer plans, $20,400 in certificates of deposit as well as having a dual income household. They have 15 years until retirement giving them adequate time to save up if they plan and use their resources wisely. We also noticed they have high home equity 852,000 as well, and their whole life insurance policy could serve as a good backup should one spouse die. However, some weaknesses we saw were that although they have saved money so far, it is nowhere near enough they need to live fully through retirement with the income replacement they are looking for. Their emergency fund is only enough to cover just over one month of expenses. They also have high interest debt, including the credit cards, car loan debt and home equity loan. Something we saw that could be interpreted in different ways was that they are helping pay off their children's student loans, which might need to be cut back on if they are looking to be more conservative with their spending.

As for opportunities, Rafe is able to make catch up contributions to his retirement accounts and Anna is able to next year as well, giving them more help with their savings process. Anna also has a growing business, meaning she might be able to make more money in the 15 years before they retire. Finally, they have high credit scores which could allow them to take advantage of financing opportunities. For threats, unfortunately, we saw a few that Rafe and Anna need to look out for. They still have a mortgage being paid off with $399,352, an outstanding home equity loan of $13,576, as well as 5 years remaining on their Honda loan. They also need to look out for inflation and be prepared for any health crisis over the next 15 years, as well as the 30 years they will have in retirement. Anna also needs to consult with Freja on what will happen to the business when she decides to retire as well as when Freja decides to retire.

While Rafe and Anna have notable strengths and opportunities, they must address their weaknesses and mitigate threats to ensure they have a secure retirement. By maximizing savings opportunities and planning strategically, they can achieve their long-term financial goals.

Part 2: Traditional Retirement Needs Analysis

- *Projected years in retirement – 30 years*

- *Income replacement ratio – 70% of their salaries (for purpose of case ignore the interest earned on cash equivalent accounts)*
- *Social Security monthly benefit (as of today, assuming claiming at full retirement age)*
    - *Rafe's PIA – $2,250*
    - *Anna's PIA – $1,440*
- *Annual inflation assumption – 3.0%*
- *Saving contributions occur at the end of the period*
- *Withdrawals occur at the beginning of the period*
- *Clients' risk tolerance for the retirement portfolio*
    - *Moderate risk tolerance during pre-retirement period*
    - *Conservative risk tolerance during the traditional retirement period*
- *Historical portfolio return*
    - *Aggressive portfolio (80/20 mix) – 9.54% annual return*
    - *Assertive (70/30 mix) – 9.01% annual return*
    - *Moderate (60/40 mix) – 8.48% annual return*
    - *Moderately conservative + (50/50 mix) – 7.95% annual return*
    - *Moderately conservative (40/60 mix) - 7.42% annual return*
    - *Conservative (30/70) – 6.89% annual return*
    - *Capital preservation (20/80) – 6.36% annual return*

Question 2

Calculate the lump sum needed from personal savings on day one of retirement to fund their inflation-adjusted annual income need.
(In calculating your answer, use the planning assumptions provided within the case. Describe the steps in your process and show your data entries and calculations or your EXCEL formulas)

Income replacement = (125,000 + 48,000) * 70% = $121,100 / year

Subtract PIA = 121,100 - 27,000 - 17,280 = $76,280

N = 30, I = (1.0689 / 1.03) - 1 = 3.77%, PV = ?, PMT = $76,820, FV = 0, BEGIN mode

PV = $1,417,778.63

Question 3

What end-of-year serial contributions are needed in years 1 through 15 to fully fund the lump sum needed?
(Show your process for calculating the serial payments and show data entries and calculations or Excel formulas)

	I	PV	PMT	FV			Current Savings
15	3.00%	($910,018.15)	$0.00	$1,417,778.63			32100
	0.05320388						72100
15	5.32%	261100	($66,868.26)	$910,018.15			91500
							65400
0		$66,868.26				Total	261100
1	3.0%	$68,874.31					
2	3.0%	$70,940.54					
3	3.0%	$73,068.75					
4	3.0%	$75,260.82					
5	3.0%	$77,518.64					
6	3.0%	$79,844.20					
7	3.0%	$82,239.53					
8	3.0%	$84,706.71					
9	3.0%	$87,247.91					
10	3.0%	$89,865.35					
11	3.0%	$92,561.31					
12	3.0%	$95,338.15					
13	3.0%	$98,198.30					
14	3.0%	$101,144.25					
15	3.0%	$104,178.57					

Deflate Lump Sum

N = 15, I = 3%, PV = ?, PMT = 0, FV = $1,417,778.63

Solve for PV = $910,018.15

Year 0 Contribution

N = 15, I = (1.0848 / 1.03) - 1 = 5.32%, PV = $261,110, PMT = ?, FV = $910,018.15

Solve for PMT = $66,868.26

Serial Contributions

Multiplying PMT * 1.03 for 15 times starting at 0

Part 3: Age Banding Methodology

This part of the case offers an opportunity to apply age-banding methodology, which is described in the journal article "Age Banding: A Model for Planning Retirement Needs." Based on the client data and planning assumptions provided in the case, you will calculate expenses throughout each year of the retirement period, the lump-sum need at the start of each band, the lump-sum need after adjusting for Social Security benefits, and the annual retirement contributions.

Part 3 - Age Banding Retirement Income Planning Methodology

Use the following planning assumptions in working Part 3 of the case study.

- *Three bands will be applied in this part of the case*
    - *Band 1 - Age 67-76*
    - *Band 2 - Age 77-86*

- *Band 3 - Age 87-96*

- *Projected expenses for the year prior to the start of retirement follow.*

Projected Expenses	
	retire yer
taxes	($64,819.23)
living	($55,075.71)
healthcare	($17,945.94)
leisure	($12,463.74)
	($150,304.62)

Footnotes to the expense projections

- *The mortgage, home equity, auto, and credit card loans were paid off prior to the pre-start of retirement.*
- *The projected living, taxes and leisure reflect current expenses inflated at the cost-of-living assumption*
- *The healthcare projection reflects the current miscellaneous health expenses inflated at a 6% annual cost-of-living adjustment plus the estimated cost of Medicare Part B, Part D, and Supplemental Insurance (MediGap).*
- *Gifts to the children and IRA contributions ended*

- *Band expense adjustments (for first year of each band) -*
  As described in the age-banding journal article, expenses in the first year of each band will be adjusted based on the following matrix.

	band 1	band 2	band 3
taxes	0.5	1	1
basic life	0.7	0.8	0.9
health	1.15	1.2	1.25
leisure	1.5	0.5	0.25

Footnotes to the band expense adjustments

- *During each of the bands, taxes and living expenses rise by 3% each year (inflation rate) and healthcare and leisure expenses rise by 7% each year*
- *Withdrawals occur at the beginning of the period.*

- *Social Security*
  - *Assume Social Security benefits will cover 30% of expenses during band*
- *Portfolio savings, construction, and reinvestment rates*
  - *All client retirement saving contributions end when Rafe retires at ag 67.*
  - *Three dedicated retirement portfolios (one for each band) will be maintained.*
  - *Client risk tolerance during the withdrawal period for each band and throughout the buffer to bands 2 and 3 = conservative*

- *Client risk tolerance before the start of band 1 (pre-retirement) or before the buffer period to bands 2 and 3 (pre-buffer period) = you will determine what is appropriate given timeline and client data*
- *For purposes of this case, you will not apply a "buffer" allocation to band 1; however, you will apply that concept to bands 2 and 3*

- *Portfolio return assumptions*
  - *Ultra aggressive (90/10 mix) – 10.07% annual return*
  - *Aggressive + (85/15 mix) – 9.81% annual return*
  - *Aggressive (80/20 mix) – 9.54% annual return*
  - *Assertive + (75/25 mix) – 9.28% annual return*
  - *Assertive (70/30 mix) – 9.01% annual return*
  - *Moderate + (65/35 mix) – 8.75% annual return*
  - *Moderate (60/40 mix) – 8.48% annual return*
  - *Moderately conservative (50/50 mix) – 7.95% annual return*
  - *Conservative + (40/60 mix) – 7.42% annual return*
  - *Conservative (30/70) – 6.89% annual return*
  - *Capital preservation (20/80) – 6.36% annual return*

Question 4

Describe your process for calculating annual expenses through the three bands, and then list the annual expenses for each year, including taxes, basic life, health, leisure, and total annual expense.

(Share a screenshot of your Excel table revealing each of the above components over the 30-year retirement period or cut-and-paste your typed list.)

Year	Taxes	Basic Life	Health	Leisure	Total Annual Expenses	After social security
67	32409.62	38553.00	20637.83	18695.61	110296.05	77207.24
68	33381.90	39709.59	22082.48	20004.30	115178.27	80624.79
69	34383.36	40900.87	23628.25	21404.60	120317.09	84221.96
70	35414.86	42127.90	25282.23	22902.93	125727.92	88009.54
71	36477.31	43391.74	27051.99	24506.13	131427.16	91999.01
72	37571.63	44693.49	28945.63	26221.56	137432.30	96202.61
73	38698.78	46034.29	30971.82	28057.07	143761.96	100633.37
74	39859.74	47415.32	33139.85	30021.06	150435.97	105305.18
75	41055.53	48837.78	35459.64	32122.54	157475.49	110232.84
76	42287.20	50302.92	37941.81	34371.12	164903.04	115432.13
77	87111.62	59213.72	42362.86	12259.03	200947.23	140663.06
78	89724.97	60990.13	45328.26	13117.16	209160.52	146412.37
79	92416.72	62819.83	48501.23	14035.37	217773.16	152441.21
80	95189.22	64704.43	51896.32	15017.84	226807.82	158765.47
81	98044.90	66645.56	55529.06	16069.09	236288.62	165402.03
82	100986.25	68644.93	59416.10	17193.93	246241.20	172368.84
83	104015.84	70704.28	63575.22	18397.50	256692.84	179684.99
84	107136.31	72825.41	68025.49	19685.33	267672.53	187370.77
85	110350.40	75010.17	72787.27	21063.30	279211.14	195447.80
86	113660.91	77260.47	77882.38	22537.73	291341.50	203939.05
87	117070.74	89525.57	86806.41	12057.69	305460.40	213822.28
88	120582.86	92211.34	92882.85	12901.72	318578.78	223005.15
89	124200.35	94977.68	99384.65	13804.84	332367.53	232657.27
90	127926.36	97827.01	106341.58	14771.18	346866.13	242806.29
91	131764.15	100761.82	113785.49	15805.17	362116.63	253481.64
92	135717.07	103784.68	121750.48	16911.53	378163.75	264714.63
93	139788.59	106898.22	130273.01	18095.33	395055.14	276538.60
94	143982.24	110105.16	139392.12	19362.01	412841.53	288989.07
95	148301.71	113408.32	149149.57	20717.35	431576.94	302103.86
96	152750.76	116810.57	159590.04	22167.56	451318.93	315923.25

	band 1	band 2	band 3
taxes	0.5	1	1
basic life	0.7	0.8	0.9
health	1.15	1.2	1.25
leisure	1.5	0.5	0.25

	Before	After social
Taxes	64819.23	45373.461
Basic Life	55075.71	38552.997
health	17945.94	12562.158
leisure	12463.74	8724.618

Projected Expenses	
	retire yer
taxes	($64,819.23)
living	($55,075.71)
healthcare	($17,945.94)
leisure	($12,463.74)
	($150,304.62)

We broke the 30 retirement years into three age-banding groups, adjusting for taxes, basic needs, health, and leisure in each phase before social security deductions while also accounting inflation every year. These calculations gave the expenses—taxes, basic living, health, and leisure; from this we can get the total for each year.

Question 5

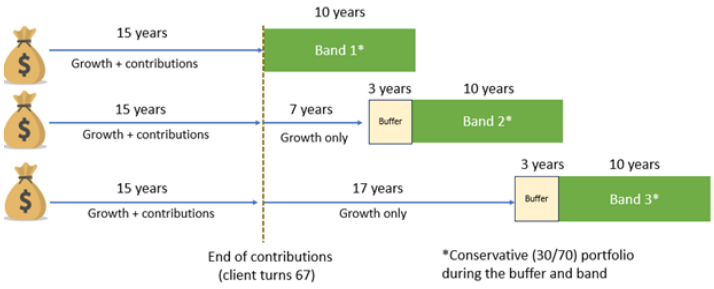
Calculate the 1) lump sum needed at the start of each band and 2) the adjusted lump sum given that Social Security will cover part of the retirement income needed (Social Security assumption provided.)

(Show your calculator inputs or your Excel formula/table.)

	Lump sum need (beginning of band)	Lump sum need (reduced for Social Security)		
Band 1	$ 1,356,955.26	$ 949,868.68	=SUM(N43:N52)	=SUM(O43:O52)
Band 2	$ 2,432,136.55	$ 1,702,495.59	=SUM(N53:N62)	=SUM(O53:O62)
Band 3	$ 3,734,345.77	$ 2,614,042.04	=SUM(N63:N72)	=SUM(O63:O72)

We calculated the lump sum needed at the start of each selective band using the present value of the collective expense totals. Then, we adjusted the lump sum by subtracting Social Security benefits, showing both the total need and reduced need for each band.

Question 6



In working this question, you might apply the following process.

1. *Based on the Social Security adjusted lump sums calculated in the previous question, discount the Band 2 and Band 3 lump sums to the start of the buffer (using the conservative 30/70 portfolio reinvestment rate.)*

2. *Determine the portfolio asset allocation that you believe is appropriate for Band 1 up until the start of the withdrawal period at age 67 and the portfolios asset allocations that you believe are appropriate for Bands 2 and 3 up to the start of the buffer.*
3. *Discount the lump sum need for Bands 2 and 3 at your reinvestment rate back to the end of saving contributions (client turns 67).*
4. *Now that you know the target savings at this point, decide on how you will allocate the current retirement savings (IRAs, 401k, and SIMPLE) to allocated to Band 1, Band 2 and Band 3.*
5. *Now that you know the "N", "I", "PV", and "FV", you can solve for the "PMT"*

Calculate the annual savings contributions based on the age-banding approach. The following graphic depicts the case study's investment timelines for each band.

Band 2:

N = 3, I = (1.0689 / 1.03) - 1 = 3.77%, PV = ?, PMT = 0, FV = $1,702,495,59

PV = $1,523,598.53

Band 3:

N = 3, I = 3.77%, PV = ?, PMT = 0, FV = $2,614,042.04

PV = $2,339,360.31

We decided on Moderate, Moderate+, and Assertive for bands 1, 2, and 3 respectively. Rafe and Anna asked for a moderate reinvestment rate prior to the start of retirement, so for our first band we decided to keep it that way. However, since they have more time to bounce back if there is a dip in investments, we decided to increase the aggressiveness for both Band 2 and 3. Once they reach the buffer it would switch to conservative to preserve their savings.

Band 2:

N = 7, I = (1.0875 / 1.03) - 1 = 5.58%, PV = ?, PMT = 0, FV = $1,523,598.53

PV = $1,294, 570.10

Band 3:

N = 17, I = (1.091 / 1.03) - 1 = 5.92%, PV = ?, PMT = 0, FV = $2,339,360.31

PV = $1,968,625.93

50%, 30%, 20% for Band 1, 2, 3, respectively; because they have more time to build wealth in the later bands, so we decided to put most of the money in the first one since they need it sooner.

Band 1 PMT required until age 67 to cover shortfall
PV=261,100*50%=-130,550
N=15
I= (1.0848/1.03)-1= 5.33%
PMT=?--->-56,700.74
FV=949,868.68

Band 2 PMT required until age 67 to cover shortfall
PV=261,100*30%=-78,330
N=15
I=(1.0875 / 1.03) - 1 = 5.58%
PMT=?--->-49,576.67
FV=1,294, 570.10

Band 3 PMT required until age 67 to cover shortfall
PV=261,100*20%= -52,220
N=15
I=(1.091 / 1.03) - 1 = 5.92%
PMT=?----> -79,745.64
FV=1,968,625.93

	Band 1	Band 2	Band 3
Lump Sum Need	$949,868.68	$1,523,598.53	$2,339,369.31
Band's portfolio reinvestment rate	8.48%	8.75%	9.01%
PV of each band at 67	$949,868.68	$1,294,570.10	$1,968,625.93
Allocated Savings	50%	30%	20%
Annual Savings Contirbution	$56,700.64	$49,576.67	$79,745.64

Part 4: Share your Case Study Reflections
The final part of the case study is to reflect on this practical-application case study. Share your major learning takeaways and discuss how you will use this information in working with clients and/or for your own retirement income planning.

Question 7

- *What are the opportunities and challenges of applying age-banded methodology versus traditional retirement needs analysis?*

- *How will you tailor this retirement income planning approach be tailored for different clients.*
- *How will you communicate the portfolio risk and terminal value uncertainty with the client?*

The final part of the case study is to reflect on this practical-application activity. Share you major learning takeaways regarding traditional and age-banded retirement income planning. In responding to this reflection question, consider the following questions.

Reflecting on the case study, we learned a lot about the difference between traditional retirement planning and the age-banded approach. Traditional planning is simple and not very efficient, it focuses on consistent withdrawal rates and income needs. However, it overlooks the nature of retirement and the ups and downs that come with it, such as spending patterns, shifting priorities, urgent needs and rising healthcare costs. The age-banded method breaks retirement into phases, early, mid, and late. This allows individuals to strategically plan out phases of their lives based on their needs. For example, we can allocate more for travel and leisure early on and prioritize healthcare and legacy goals later. While this approach offers a lot of flexibility, it is important one has a very good financial advisor to allocate their money effectively. Tailoring age-banded planning can be very tricky and depends on the client's circumstances. High-net-worth individuals might focus on early discretionary spending such as travel and leisure spending, while middle-income clients may prioritize essential expenses to avoid outliving their savings. Furthermore, clients with health concerns need to address healthcare costs earlier in their retirement. It was really interesting to see exactly how each of these classes of individuals allocated their funds. Moving onto communication, it is very crucial to manage your clients expectations about portfolio risk and investment outcomes. Transparency is probably the most important attribute a financial advisor can possess and your client must always know their best- and worst-case scenarios. Ultimately, balancing your clients lifestyle goals, risk tolerance, and legacy planning is essential for creating confidence in their financial future. This case study has taught us the value in combining effective portfolio management with our clients needs. It is so important that your clients can trust you and feel secure and prepared for their financial future.