

Investing for Retirement



AND

The Center for Financial Studies

Southern New Hampshire University*

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Investing for Retirement

Executive Summary

The purpose of this module is to present a method for estimating the need for retirement income, the most common types of retirement savings plans, and the effects of compounding and the relative benefit of establishing a retirement savings plan as early as possible. The module can be divided into four related segments:

1. A conceptual discussion of retirement planning
2. Estimation of annual retirement income need
3. Determination of required annual savings to accumulate a sufficient retirement savings balance
4. Choosing a suitable plan type

Segment 1 is a discussion of retirement planning in general. This discussion addresses determination of how much retirement income is likely to be needed in each year of retirement, determination of the level of annual savings required to accumulate a sufficient retirement account balance, the effects of compounding and types of retirement savings plans. Segment 2 is a hands-on internet exercise in which participants determine their need for annual retirement income. Segment 3 is a hands-on internet exercise in which participants estimate the amount of annual savings required to achieve their retirement savings goal. The more common types of retirement plans, including IRAs and employer-sponsored plans, are reviewed in Segment 4.

Educational Motivation

- To estimate the amount of retirement income expected to be required and formulate a plan for providing the required retirement income
- To appreciate the relative advantage of

establishing a retirement savings plan as early as possible

- To become familiar with various types of retirement plans

Overview of Material

Key Terminology:

401(k) plan: Deferred compensation plan that allows an employee to contribute a portion of her pre-tax cash wages to a retirement account. Available to employees of for-profit companies that elect to provide such plans.

403(b) plan: Deferred compensation plan available to employees of public and private educational institutions and charitable entities that elect to provide such plans; also called TSA or Tax Sheltered Annuity.

457 plan: Deferred compensation plan, similar to a 401(k) plan, often available to state and municipal employees.

Asset class: A category of financial asset, such as stocks, bonds, or real estate.

Deferred compensation plan: A defined contribution plan that allows for employees to make pre-tax contributions to retirement accounts. The contributions and earnings are not taxed until withdrawn from the account.

Defined benefit plan: A plan that specifies the benefits the employee will receive at normal retirement age (as defined by the plan). A defined benefit plan is any plan that is not a defined contribution plan.

Defined contribution plan: A defined contribution plan is a plan that provides for a separate account for each person covered by the plan. Types of defined contribution plans include profit-sharing plans, stock bonus plans, money purchase pension plans and deferred compensation

plans.

Diversification: A means of managing risk by investing in several different securities within an asset class, across asset classes and globally.

Dollar cost averaging: A strategy that involves purchasing securities, most often mutual funds, at regular intervals (e.g., every month or every pay period) without regard to how the market is moving. The goal of dollar cost averaging is to reduce volatility and buy at a low average purchase price.

Individual retirement arrangement (IRA): A special account in which a person sets aside a portion of his or her income for retirement. Traditional and Roth IRAs are discussed below.

Mutual fund: A type of investment company that pools money from many investors and invests the money in stocks, bonds, short-term money-market instruments, or other securities as described in the funds's prospectus. Technically known as an open-end fund or open-end investment company. The mutual fund owns the assets and the contributors of the pooled money own shares of the mutual fund. Mutual funds are managed by separate entities called investment advisers.

Portfolio: A group of assets held at one time.

Return: Dividends, interest or other types of income received as a result of owning an asset, plus any change in value of the asset while the investor owns it.

Risk: Degree of uncertainty of the expected rate of return of a security or a portfolio.

Background Information

Retirement planning requires three basic steps:

1. Determine how much annual income will be needed in each year of retirement.

2. Determine how much must be accumulated in retirement savings by the start of retirement in order to fund the retirement years.

3. Determine how much must be contributed to retirement savings in each working year in order to accumulate the required amount determined in step #2.

Determining annual retirement income need

There are generally three key components of income in retirement:

1. social security, which provides on average only 40% of an individual's pre-retirement income;
2. employer-sponsored savings plans, i.e., defined benefit or defined contribution plans, such as pensions and 401(k) plans); and
3. individual savings plans such as IRAs, individual saving and investing accounts, etc.

One approach to determining how much income will be required for each year of retirement is to imagine what you would like your financial situation to be during retirement and estimate how much income you would require if that were your situation today. This amount is then adjusted for inflation.

Suppose, for example, that you would like to live in a house on which you no longer have a mortgage but still have to pay real estate taxes and homeowner's insurance. You will also have to pay your utility bills, buy groceries and pay the other usual bills. You would like to buy a new car every six years and would like to travel for two months of each year. You may also want to plan on some medical bills, unexpected expenses, gifts for grandchildren or other expenses. You would also want to include your estimated tax liability during retirement. Let's say that if you were to retire today, you would need \$50,000 in retirement income each year. If you anticipate having sources of income during retirement such as Social Security benefits

or income from a part time job, you may want to subtract that income from the \$50,000.

If you are going to retire in 50 years instead of today, the general level of prices will have increased due to inflation. In the past 50 years, inflation has caused prices to increase so that something that cost \$1 in 1956 would cost \$7.31 in 2006, a multiplier of 7.31 which translates to a rate of inflation of about 4% per year. (Source: <http://data.bls.gov/cgi-bin/cpicalc.pl>)

Assuming a similar rate of inflation in the next 50 years, we estimate that \$50,000 today would equate to \$365,500:

$$\$50,000 * 7.31 = \$365,500.$$

In other words, in 50 years you would need an estimated \$365,500 per year to pay for expenses that would cost \$50,000 today. In the Segment 2, we will use an online calculator to account for inflation in estimating need for retirement income in the future.

Determining required level of accumulated retirement savings

The next step is to determine how much you must have accumulated in your retirement savings in order to be able to withdraw sufficient funds to cover your living expenses (\$50,000 per year in today's dollars, \$365,500 per year in future dollars) for each year of retirement. In order to determine this amount, you need to estimate how long you are likely to live after retiring. Life Expectancy tables provide an estimate. If you plan to retire at age 67 and Life Expectancy tables predict that you will live to age 87, you will want to accumulate enough retirement savings by age 67 so that you can withdraw enough money each year for 20 years to pay for your living expenses. You will also want to consider that inflation will continue to cause an increase in prices and that your retirement savings will continue to earn some rate of return during your 20 years of retirement. In Segment 2, we will use another online calculator to estimate the amount of accumulated savings needed at the start of retirement.

Determining required annual contribution to retirement savings

The third step is to determine how much you must save each year between now and the start of your retirement in order to accumulate the desired retirement account balance. Again, you will want to consider that accumulated contributions will earn some rate of return and will also lose some purchasing power due to inflation. We will use an online calculator to estimate the required annual savings in Segment 3. Once you have determined how much you need to save each year, you need to decide which retirement savings plan(s) will best meet your needs. The EFFECTS OF COMPOUNDING handout at the end of the module calls attention to the benefit of establishing a retirement savings plan early, i.e., more years of saving means less savings required each year.

Types of retirement savings plans

Employer-sponsored retirement savings plans are divided into two broad categories, defined benefit and defined contribution, as described in the **Key Terminology** section above. Defined benefit plans have become much less common in recent years. Defined contribution plans are by far the norm and are discussed further here.

IRAs (Individual Retirement Arrangements):

IRAs are retirement accounts that a person with earned income opens to benefit himself, independent of that person's employer. We first review some points that traditional and Roth IRAs have in common and then point out their differences. Some points that apply to both types of IRAs, traditional and Roth, include:

1. Penalty for early withdrawal, i.e., prior to age 59½, unless one of several exceptions is met. A complete list of exceptions may be found at <http://www.irs.gov/pub/irs-pdf/p590.pdf>.
2. Contributions are limited to the amount of your earned income for the year or a

maximum amount (\$4000 in 2006, \$5000 if age 50 or older), whichever is less. For the maximum contribution for the current year, visit <http://www.irs.gov/pub/irs-pdf/p590.pdf>.

3. Earned income includes wages, salaries, commissions, self-employment income and alimony.
4. Contributions may be made to a spousal IRA for a marginally employed spouse. (Refer to <http://www.irs.gov/pub/irs-pdf/p590.pdf> for details.)

Traditional IRAs:

1. Minimum distributions are required, beginning on April 1 of the year following the year in which you turn 70 ½ years old.
2. Earnings are tax-deferred, meaning that tax is not owed on the earnings until the funds are withdrawn.
3. Withdrawals of contributions that were deducted from income in the year the contribution was made are taxed in the year of the withdrawal.
4. Contributions may reduce current income for tax purposes. For employees NOT covered by an employer-sponsored retirement plan, see <http://www.irs.gov/pub/irs-pdf/p590.pdf> for income limitations.

5. For those who ARE covered by an employer-sponsored retirement plan, the income limitations are below:

IF your filing status is...	AND your modified adjusted gross income is ...	THEN you can take ...
Single or Head of Household	\$50,000 or less	A full deduction
	More than \$50,000 but less than \$60,000	A partial deduction
	\$60,000 or more	No deduction
Married filing jointly or qualifying widow(er)	\$70,000 or less	A full deduction
	More than \$70,000 but less than \$80,000	A partial deduction
	\$80,000 or more	No deduction
Married filing separately and you lived with your spouse during the year	Less than \$10,000	A partial deduction
	\$10,000 or more	No deduction

Adapted from: <http://www.irs.gov/pub/irs-pdf/p590.pdf>

Roth IRAs:

1. Earnings are tax-free, meaning that they are not taxed as they are earned nor when they are withdrawn.
2. Contributions do not reduce current taxes and are not taxed when withdrawn.
3. Eligibility to make contributions is subject to income limitations, depending on income tax filing status:

IF your filing status is...	AND your modified adjusted gross income is ...	THEN you can...
Single or Head of Household	Less than \$95,000	Contribute up to the limit for the current year as described above
	At least \$95,000 but less than \$110,000	Contribute an amount less than the limit for that year
	\$160,000 or more	Not contribute
Married filing separately and you lived with your spouse during the year	More than zero but less than \$10,000	Contribute an amount less than the limit for that year
	At least \$10,000	Not contribute
Married filing jointly or qualifying widow(er)	Less than \$150,000	Contribute up to the limit for the current year as described above
	At least \$150,000 but less than \$160,000	Contribute an amount less than the limit for that year
	\$160,000 or more	Not contribute

Adapted from: <http://www.irs.gov/pub/irs-pdf/p590.pdf>

Employer-provided plans: In this module, we discuss retirement plans typically available through large employers. Information about retirement plans often available through small employers or for the self-employed, such as SEP-IRAs and SIMPLEs, can be found at <http://www.irs.gov/pub/irs-pdf/p560.pdf>.

As described in the **Key Terminology** section, employer-provided retirement plans are referred to by different names, depending on the nature of the employer: 403(b), 457 or 401(k). However, these different types of plans have many characteristics in common:

1. The employee makes contributions to the plan from his salary before taxes are calculated.
2. The maximum contribution an employee may make to the plan is 100% of the employee's salary or a maximum amount (\$15,000 in 2006), whichever is less.
3. The employer may make contributions to the plan on behalf of employees.
4. Earnings grow tax-deferred, similar to traditional IRAs.
5. Withdrawals are taxed in the year of the withdrawal. Note: The mandatory minimum distribution rules also apply to 401(k)s – you must withdraw the minimum required amount (based on your age and accumulated savings) by April 1 of the year after the year you turn 70 ½.
6. A penalty applies for early withdrawal, i.e., prior to age 59½, unless one of several exceptions is met. A complete list of exceptions may be found on at <http://www.irs.gov/pub/irs-pdf/p575.pdf>.

Investment options: Whether your retirement savings are held in a traditional or Roth IRA, or 401(k), 403(b) or 457 plan, you are likely to have several options as to your investment choices. Most of the plans mentioned above allow the owner to invest in financial securities of a variety of asset classes including stocks, bonds and mutual

funds. Some employers, however, limit the choices to a small number of mutual funds and company stock. You will want to hold a wide variety of assets so that his portfolio is well-diversified, thereby reducing risk while still earning an adequate rate of return. For more information about diversified portfolios, the instructor may want to reference the *Creating and Monitoring a Diversified Stock Portfolio* module in this series. By regularly investing a specific amount, the owner benefits in two ways:

1. From disciplined investing so that he is less likely to skip a retirement contribution, and
2. From dollar cost averaging, automatically buying fewer securities when security prices are high and buying more when prices are low.

More information about dollar cost averaging may be found in the *Portfolio and Risk Management* module that is part of this series.

Other general points: Generally, funds from an employer-sponsored retirement plan can be transferred directly to a traditional IRA without a tax consequence when an employee leaves the service of the employer. Funds may be transferred between traditional IRA accounts or between Roth IRA accounts without tax consequence. Funds may be transferred from a traditional IRA to a Roth IRA, but a tax liability will likely be incurred.

Web Site Documentation

http://apps.finra.org/Investor_Information/Smart/401k/000100.asp

A comprehensive tutorial about deferred compensation plans.

<http://www.nasdaq.com/reference/5retire.stm>

A tutorial about retirement planning.

<http://www.banksite.com/calc/retire>

A calculator that estimates how much you need to have accumulated in your retirement account in order to fund your retirement years.

http://apps.finra.org/Investor_Information/Calculators/1/RetirementCalc.aspx

A calculator that estimates how much you need to save each year in order to accumulate sufficient retirement savings.

<http://www.irs.gov/pub/irs-pdf/p590.pdf>

A US Treasury publication with current information about IRAs.

<http://data.bls.gov/cgi-bin/cpicalc.pl>

A source for estimated rate of inflation.

<http://www.cdc.gov/nchs/fastats/lifexpect.htm>

A source for estimated life expectancy.

www.ssa.gov

A source for estimated Social Security benefits at retirement. The calculator provided at this site works only for those who are age 25 or older.

<http://www.irs.gov/pub/irs-pdf/p560.pdf>

A US Treasury publication about retirement plans for small businesses.

<http://www.irs.gov/pub/irs-pdf/p575.pdf>

A US Treasury publication about pension and annuity plans in general.

Lesson Plan and Relevant Assignments

Materials Needed:

- WEBSITES handout
- ESTIMATING RETIREMENT INCOME NEED AND REQUIRED RETIREMENT SAVINGS worksheet
- DETERMINING NECESSARY ANNUAL CONTRIBUTIONS TO RETIREMENT SAVINGS worksheet
- THE EFFECTS OF COMPOUNDING handout

90-minute Lesson Plan:

- 30 minutes: Segment 1. Pass out the WEBSITES handout and the ESTIMATING RETIREMENT INCOME NEED AND REQUIRED RETIREMENT SAVINGS and DETERMINING NECESSARY ANNUAL CONTRIBUTIONS TO RETIREMENT SAVINGS worksheets. Review key terminology and background information.
- 25 minutes: Segment 2. Have students complete the **Estimating Retirement Income Need and Required Retirement Savings** assignment below. Ask students how they plan to save up that lump sum of money.
- 20 minutes: Segment 3. Direct students to complete the **Determining Necessary Annual Contributions to Retirement Savings** assignment below. Ask students where they plan to save their money.
- 15 minutes: Segment 4. Discuss types of retirement savings plans that are likely to meet students' retirement goals. Distribute the EFFECTS OF COMPOUNDING handout and point out the difference between the two investment results. Review potential impact of postponing savings and different inflation and investment rates on savings results.

35-minute Lesson Plan:

The instructor will want to focus on either required retirement savings as explored in Segment 2 above OR on the required annual contribution to retirement savings as explored in Segment 3 above. If the instructor chooses to focus on the required annual contribution to retirement savings, the instructor will want to provide a required retirement savings level for question #1 of the DETERMINING NECESSARY ANNUAL CONTRIBUTIONS TO RETIREMENT SAVINGS worksheet.

- 15 minutes: Segment 1. Pass out WEBSITES handout and the ESTIMATING RETIREMENT INCOME NEED AND REQUIRED RETIREMENT SAVINGS or DETERMINING NECESSARY

ANNUAL CONTRIBUTIONS TO RETIREMENT SAVINGS worksheet. Review key terminology and background information.

- 15 minutes: Segment 3. Direct students to complete the **Determining Necessary Annual Contributions to Retirement Savings** assignment below.
- 5 minutes: Review potential impact of postponing savings and different inflation and investment rates on savings results. Distribute the EFFECTS OF COMPOUNDING handout and point out the difference between the two investment results.

Assignments:

Segment 2 – Estimating Retirement Income Need and Required Retirement Savings

URL: <http://www.banksite.com/calc/retire>

1. Have students estimate their need for retirement income by imagining their ideal retirement using the ESTIMATING RETIREMENT INCOME NEED AND REQUIRED RETIREMENT SAVINGS worksheet. If the student were to retire today under those circumstances, how much annual income would he require (Retirement Income Need)?
2. Direct students to use the online calculator to estimate how much they each will need to have accumulated in their retirement savings to fund their retirement (Required Retirement Savings). For annual inflation, use 4.0%. Annual yield on balance is the expected rate of return on retirement savings; 8% is a conservative figure.
3. If time allows, the instructor may encourage students to explore the impact of inflation and rate of return by having students change these figures in the online calculator and noting the different results.
4. If time allows, the instructor may direct students to <http://www.cdc.gov/nchs/fastats/lifexp ec.htm> to estimate their life

expectancy using the *Life expectancy by age, race, and sex, 1900-2002* link.

Segment 3 – Determining Necessary Annual Contributions to Retirement Savings

URL:

http://apps.finra.org/Investor_Information/Calculators/1/RetirementCalc.aspx

1. Direct students to enter their current age, as well as the age at which they expect to retire, expected rate of return (8%) on retirement savings, inflation rate (4%), Retirement Income Need, and expected length of retirement as done in Segment 2.
2. Direct students to enter "0" (zero) for the "current savings balance". Students should enter an estimated current and retirement tax rate; 15% is a reasonable figure.
3. Direct students to click "Calculate" to obtain the Required Annual Contributions to Retirement Savings. There is a blank on the DETERMINING NECESSARY ANNUAL CONTRIBUTIONS TO RETIREMENT SAVINGS worksheet to record this information.
4. If time allows, the instructor may have students vary the inputs to observe the effect of different rates of inflation and return on investment and of tax sheltered status on retirement savings. In particular, the instructor may highlight the effect of delaying retirement savings by directing students to enter a current age older than their real age.

INVESTING FOR RETIREMENT

WEBSITES

http://apps.finra.org/Investor_Information/Smart/401k/000100.asp

A comprehensive tutorial about deferred compensation plans.

<http://www.nasdaq.com/reference/5retire.stm>

A tutorial about retirement planning.

<http://www.banksite.com/calc/retire>

A calculator that estimates how much you need to have accumulated in your retirement account in order to fund your retirement years.

http://apps.finra.org/Investor_Information/Calculators/1/RetirementCalc.aspx

A calculator that estimates how much you need to save each year in order to accumulate sufficient retirement savings.

<http://www.irs.gov/pub/irs-pdf/p590.pdf>

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www.ssa.gov

A source for estimated Social Security benefits at retirement. The calculator provided at this site works only for those who are age 25 or older.

<http://www.irs.gov/pub/irs-pdf/p560.pdf>

A US Treasury publication about retirement plans for small businesses.

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A US Treasury publication about pension and annuity plans in general.



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INVESTING FOR RETIREMENT

ESTIMATING RETIREMENT INCOME NEED AND REQUIRED RETIREMENT SAVINGS WORKSHEET

Imagine your ideal retirement: type of home, likely bills to be paid, leisure activities, medical expenses, extravagant gifts for grandchildren. Use the space below for notes about your likely expenses, including amounts. **If you retired under those circumstances today, how much annual income would you need?** \$ _____

Go to <http://www.banksite.com/calc/retire>.

1. At what age do you expect to retire? _____
2. For how long do you expect to be retired? (Note: this is a nice way of asking how long do you expect to be retired before your expenses become your heirs' problem.) _____ years
3. Assuming 4.0% annual inflation and 8.0% annual yield on balance, i.e., the rate of return you expect to earn on your retirement savings, use the online calculator to **estimate how much you should have accumulated in your retirement savings by the time you retire.** \$ _____
4. Try a different rate of inflation: Inflation _____ % Resultant Savings \$ _____
5. Try a different rate of return: Return _____ % Resultant Savings \$ _____
6. Consider the impact of retiring at a different age.

INVESTING FOR RETIREMENT

DETERMINING NECESSARY ANNUAL CONTRIBUTIONS TO RETIREMENT SAVINGS WORKSHEET

Go to http://apps.finra.org/Investor_Information/Calculators/1/RetirementCalc.aspx.

1. Enter the amount determined in step #3 of the ESTIMATING RETIREMENT INCOME NEED AND REQUIRED RETIREMENT SAVINGS worksheet or an amount provided by the instructor for "desired fund amount to calculate required annual contribution".
2. Enter your current age, the age at which you expect to retire (#1 above), and expected rate of return (8%) on your retirement savings.
3. Enter "0" (zero) for the "current amount in fund".
4. **How much must you contribute to a retirement savings account each year in order to have enough retirement savings to fund your retirement?**
\$ _____
5. Consider the impact of starting to save for retirement at a later age.

INVESTING FOR RETIREMENT

ESTIMATING RETIREMENT INCOME NEED AND REQUIRED RETIREMENT SAVINGS

WORKSHEET

SAMPLE RETIREMENT ESTIMATIONS

Inputs

Required Income (Current Dollars)	\$ 50000
Required Income (Future Dollars)	\$ 355334.17
Number of Years Until Retiring	50
Number of Years After Retiring	20
Annual Inflation (on Required Income)	4 %
Annual Yield on Balance	8 %

You will need \$ 508385.77

Year	Beg Bal	Withdraw	Interest	End Bal
1	508385.77	355334.17	378281.89	5106805.49
2	5106805.49	369547.54	378980.64	5116238.59
3	5116238.59	384329.44	378552.73	5110461.88
4	5110461.88	399702.62	376860.74	5087620.01
5	5087620.01	415690.72	373754.34	5045683.63
6	5045683.63	432318.35	369069.22	4982434.50
7	4982434.50	449611.08	362625.87	4895449.29
8	4895449.29	467595.53	354228.30	4782082.07
9	4782082.07	486299.35	343662.62	4639445.34
10	4639445.34	505751.32	330695.52	4464389.54
11	4464389.54	525981.37	315072.65	4253480.82
12	4253480.82	547020.63	296516.82	4002977.00
13	4002977.00	568901.45	274726.04	3708801.59
14	3708801.59	591657.51	249371.53	3366515.61
15	3366515.61	615323.81	220095.34	2971287.14
16	2971287.14	639936.77	186508.03	2517858.40
17	2517858.40	665534.24	148185.93	2000510.10
18	2000510.10	692155.61	104668.36	1413022.85
19	1413022.85	719841.83	55454.48	748635.50
20	748635.50	748635.50	0.00	0.00

Source: <http://www.banksite.com/calc/retire>

INVESTING FOR RETIREMENT

DETERMINING NECESSARY ANNUAL CONTRIBUTIONS TO RETIREMENT SAVINGS

SAMPLE RETIREMENT ESTIMATIONS

Retirement Calculator

Retirement Calculator: Results

Current Savings:	\$0.00
Annual Income:	\$50,000.00
Other Income (SSI, etc.)	\$0.00
Annual Yield:	8 %
Predicted Inflation:	4 %
Current Tax Rate:	15 %
Retire Tax Rate:	15 %
Current Age:	15
Retire Age:	65
Withdraw Until Age:	85

Investments are tax sheltered.

Annual Contribution:	\$6,011.83
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Source: http://apps.finra.org/Investor_Information/Calculators/1/RetirementCalc.aspx



INVESTING FOR RETIREMENT

THE EFFECTS OF COMPOUNDING

Age	Investor A		Investor B	
	Contribution	Year-end Value	Contribution	Year-end Value
19			\$2,000	\$2,200
20			\$2,000	\$4,620
21			\$2,000	\$7,282
22			\$2,000	\$10,210
23			\$2,000	\$13,431
24			\$2,000	\$16,974
25			\$2,000	\$20,872
26	\$2,000	\$2,200		\$22,959
27	\$2,000	\$4,620		\$25,255
28	\$2,000	\$7,282		\$27,780
29	\$2,000	\$10,210		\$30,558
30	\$2,000	\$13,431		\$33,614
31	\$2,000	\$16,974		\$36,976
32	\$2,000	\$20,872		\$40,673
33	\$2,000	\$25,159		\$44,741
34	\$2,000	\$29,875		\$49,215
35	\$2,000	\$35,062		\$54,136
36	\$2,000	\$40,769		\$59,550
37	\$2,000	\$47,045		\$65,505
38	\$2,000	\$53,950		\$72,055
39	\$2,000	\$61,545		\$79,261
40	\$2,000	\$69,899		\$87,187
41	\$2,000	\$79,089		\$95,905
42	\$2,000	\$89,198		\$105,496
43	\$2,000	\$100,318		\$116,045
44	\$2,000	\$112,550		\$127,650
45	\$2,000	\$126,005		\$140,415
46	\$2,000	\$140,805		\$154,456
47	\$2,000	\$157,086		\$169,902
48	\$2,000	\$174,995		\$186,892
49	\$2,000	\$194,694		\$205,581
50	\$2,000	\$216,364		\$226,140

Investor A invests \$2,000 a year for 40 years for a total investment of \$80,000, starting at age 26. Investor B invests \$2,000 a year for 7 years for a total investment of \$14,000, starting at age 19. Consult the table and compare the results of net earnings. These results assume a 10% tax-sheltered rate of return, which approximates the rate of return in the stock market for the past sixty years.

Age	Investor A		Investor B	
	Contribution	Year-end Value	Contribution	Year-end Value
51	\$2,000	\$240,200		\$248,754
52	\$2,000	\$266,420		\$273,629
53	\$2,000	\$295,262		\$300,992
54	\$2,000	\$326,988		\$331,091
55	\$2,000	\$361,887		\$364,200
56	\$2,000	\$400,276		\$400,620
57	\$2,000	\$442,503		\$440,682
58	\$2,000	\$488,953		\$484,750
59	\$2,000	\$540,049		\$533,225
60	\$2,000	\$596,254		\$586,548
61	\$2,000	\$658,079		\$645,203
62	\$2,000	\$726,087		\$709,723
63	\$2,000	\$800,896		\$780,695
64	\$2,000	\$883,185		\$858,765
65	\$2,000	\$973,704		\$944,641
Less: Total Invested		(\$80,000.00)		(\$14,000)
Equals Net Earnings		\$893,704		\$930,641
Money Grew		11-Fold		66-Fold

