

Takin' Care of Business

#9



CPA... Imagine the possibilities!



Learning Activity

Financial Planning: Students learn the value of compound interest and the future value of an annuity in conjunction with the U.S. tax system, and the advantages provided by tax-deferred savings plans, such as a 401(k) plan.

Learning Objectives

1. Understand that certain U.S. tax laws assist individuals in improving their financial position.
2. Understand the two main advantages provided by a 401(k) plan.
3. Understand the power of compound interest.
4. Understand the meaning and structure of a progressive tax system.

Academic Standard

“Students will analyze functions of one variable by investigating rates of change and compare properties of exponential and periodic functions.” (NCTM)

“Students understand that the political process affects the allocation of limited personal and public resources.” (NBEA)

“Students use mathematical procedures to analyze business problems in areas such as taxation and savings and investment.” (NBEA)

Assessment

Students will: (1) calculate gross income, pre-tax contributions to a 401(k) plan, taxable income, federal taxes, and after-tax income, (2) calculate periodic rates of return, payment periods and savings to determine the future value of an annuity.

Business Skill

Financial Planning: CPAs provide a variety of services that utilize and interpret financial information. CPAs work with individuals, businesses and government agencies to help all segments of society deal fairly and objectively with both their opportunities and responsibilities with respect to savings, investments and taxes.

Procedure

■ **Distribute a copy of the Overview to your students and explain any terms or concepts** they are unfamiliar with. For example, **discuss the concept of tax-deferred savings**, which allows working individuals to simultaneously save for retirement tax-free and reduce their income taxes. Emphasize that one of our tax laws, known as “401(k),” is intended to assist taxpayers in improving their financial position.

■ **FIRST**, explain the **compound interest calculation** to demonstrate the mathematical relationship between the variables involved — rate and time — and **the power of compounding returns**.

The formula for the future value of an annuity is: $FV = [(1+r)^n - 1]/r * A$
where,

FV = Future value

A = Annual fixed sum

n = Number of compounding periods

r = Annual rate of return

For example, compare investing \$2400 at the end of every year versus \$200 at the end of every month for the same term (e.g., 30 years) and interest rate (e.g., 8% per year) to illustrate the power of compounding interest.

■ **THEN**, discuss how contributing to a tax-deferred savings plan, such as a 401(k) plan, can further “compound” the benefits of compounding interest by lowering taxpayers’ income tax obligation.

■ **Use the “Yearly Tax Information” Table in Activity #9** to explain how gross income, taxable income, federal taxes, take-home income and “net” take-home income are calculated. **Emphasize that contributions to tax-deferred savings plan are deducted in calculating taxable income.**

■ **In addition, be sure to emphasize the use of tax brackets when performing the tax calculation.** To illustrate how federal income taxes are calculated, use the Tax Rate Table and assume a single taxpayer has \$50,000 of taxable income. The tax on \$50,000 of taxable income is \$9,165, calculated as:

$$(7,300 * 10\%) + (29,700 - 7,300) * 15\% + (50,000 - 29,700) * 25\%$$

■ **FINALLY**, emphasize that “take-home” income is the income the taxpayer will actually keep. Therefore, the exemption amount and the standard deduction amount are added back to taxable income because, although these amounts are deducted from gross income in arriving at taxable income, the taxpayer does not actually forgo those dollar amounts.

Overview

In general, **income tax laws** serve two main purposes: **economic** and **social**. The **economic goals** of an income tax include raising revenue to operate the government, expanding investment, reducing unemployment and controlling inflation. The **social goals** of an income tax are aimed at improving both individual financial well-being and that of our society as a whole. Examples of **tax laws** aimed at improving an individual's financial position and our society as a whole include child care credits, education credits, charitable contribution deductions, and IRAs (Individual Retirement Accounts). Another income tax law that assists individuals in improving their financial position is Section 401(k) of the Internal Revenue Code (IRC). Section 401(k) of the IRC allows employers to sponsor "tax-deferred" savings plans for their employees. A tax-deferred savings plan, more commonly referred to as a **401(k) plan**, allows working individuals to simultaneously save for retirement and reduce their income taxes.

The advantages of a 401(k) plan are therefore twofold. First, the amount that is contributed to the plan is deducted from a taxpayer's income prior to determining the amount of earnings subject to income tax. Therefore, the more you contribute to the plan, the lower the amount of earnings subject to tax, and the lower the tax on one's income. (Note, however, there is a maximum amount one may contribute to a 401(k) plan. The 2005 maximum contribution is \$14,000.) The second advantage of a 401(k) plan is that the amount contributed to the

plan and the earnings it accumulates grow tax-free until the funds are withdrawn. Thus the term "tax-deferred" savings because taxes are not assessed on your contributions and earnings until the funds are withdrawn upon retirement at age 59½. If the funds are withdrawn before age 59½, the IRS will assess a financial penalty.

The ability of a working individual to simultaneously lower his or her income taxes and save for retirement tax-free is a considerable benefit provided by the U.S. tax system—a benefit that is "compounded" by the power of compound interest. Compound interest is the interest that is earned not only on the contributions made to a savings or investment account, but also to the interest that was earned on previous contributions. Therefore, the power of compound interest increases when contributions are made on a consistent basis.

In their role as financial planners, **Certified Public Accountants (CPAs)** help individuals and businesses plan their opportunities and responsibilities with respect to savings, investments and taxes. For instance, the United States employs a progressive tax system, which means a 'progressively' higher rate of tax is applied to your earnings as your earnings increase. Hence, the more you earn, the higher the tax rate applied to your earnings. In addition, individuals and businesses must be aware of the ever-changing tax laws at the state, local and federal levels of government.

Shown below is the 2005 Tax Rate Table for individual taxpayers and some basic tax guidelines:

2005 Tax Rate Table

Taxable Income is over	But not over	Tax Rate
0	\$7,300	10%
\$7,300	\$29,700	15%
\$29,700	\$71,950	25%
\$71,950	\$150,150	28%
\$150,150	\$326,450	33%
\$326,450	35%

- **Gross income** is calculated by adding salary, interest income, dividends, and other income and earnings.
- **Taxable income** is calculated by subtracting personal exemptions, the greater of itemized deductions or the standard deduction, and contributions to a tax-deferred savings plan from gross income.
- The amount deducted for **personal exemptions** for a single taxpayer is \$3,200 for every dependent the taxpayer claims. (In general, a dependent is a relative or other person that lives with you that you financially support.)
- The **standard deduction** for a single taxpayer is \$5,000.

(Note that the exemption and standard deduction amounts are for the tax year 2005 only. The personal exemption amount and the standard deduction change each year based on tax laws passed by Congress and vary depending on your tax filing status—single, married filing jointly, married filing separately, and head of household.)

Activities

Romeo and Juliet 401(k): A Tragic Tale of 'Poor' Tax Planning

ACT-1 Juliet, a single taxpayer, will earn a salary of \$100,000 a year for the next ten years. She also receives \$5,000 a year in interest income from investments, and contributes 10% of her salary *before taxes* each year to an employer-sponsored 401(k) plan. Romeo, a single taxpayer, will earn a salary of \$100,000 a year for the next ten years as well but chooses not to contribute to a 401(k) plan. Instead, Romeo saves 10% of his salary *after-taxes* in a conventional savings account at his local bank. Romeo also receives \$5,000 a year in dividend income from his investment in entertainment stocks. Both Romeo and Juliet claim one exemption (\$3,200) and use the standard deduction (\$5,000).

Use Romeo & Juliet's information to complete the "Yearly Tax Information" table.

Yearly Tax Information

Figure	Calculation	Juliet	Romeo
Gross Income	Salary, plus interest, plus dividends, plus other income	\$	\$
Pre-Tax Contribution to Tax-deferred Savings Plan		\$	\$
Taxable Income	Gross income less personal exemptions, less deductions (standard OR itemized), less contributions to tax-deferred savings plans	\$	\$
Federal Taxes	Apply taxable income to tax rate table	\$	\$
"Take-Home" Income	Taxable income less federal taxes, plus exemptions, plus deductions	\$	\$
After-tax Savings		\$	\$
Net "Take-Home" Income	Take-home income less after-tax savings	\$	\$

ACT-2 Ten years later, Romeo and Juliet meet by chance at a Shakespeare Festival. Romeo is interested in pursuing a relationship with Juliet, but Juliet is concerned with Romeo's financial planning acumen. Before making any tragic mistakes, Juliet hires you, the town's CPA, to compare her and Romeo's financial planning methods. Begin your assessment by calculating the following:

CPA's Financial Assessment

Calculation	Juliet	Romeo
The yearly tax savings as a result of contributing to the 401(k) plan.	\$	\$
The total taxes paid over 10 years.	\$	\$
The cumulative tax savings as a result of contributing to the 401(k) plan for 10 years.	\$	\$

As part of your assessment, calculate the value of Juliet's and Romeo's savings at the end of 10 years. Since taxpayers can contribute to a variety of investments in a 401(k) plan, the return is generally 8% to 12% per year. Contributions to a conventional savings account, however, generally return only 2% to 3%. Therefore, assume Juliet's contributions earn 12% per year and Romeo's earn 3% per year, and that both make their total 10% yearly contribution on an equal basis over 12 months.

Calculation	Juliet	Romeo
Monthly rate of return	%	%
Number of payments over 10 years		
Monthly contribution	\$	\$
Value of savings at the end of 10 years	\$	\$

Based on your assessment, what would you tell Juliet about Romeo's financial planning acumen?

Off Broadway...

Ralph and Ed, both single taxpayers, just moved into the same apartment complex and are discussing their individual financial positions.

Ralph will earn a salary of \$110,000 a year for the next ten years as a transportation specialist and \$15,000 from other income sources. Ralph is considering whether to contribute 10% of his salary to his employer sponsored 401(k) plan.

Ed will earn a salary of \$114,000 a year for the next ten years as an environmental waste disposal specialist. His employer does not provide a 401(k) plan.

Ralph does not think he needs to invest in a 401(k) plan because his combined income is more than Ed's. Ed, as Ralph's friend, however, has encouraged Ralph — unsuccessfully thus far — to contribute to his employer's tax-deferred savings plan. Ed has asked you, a CPA, to prepare an analysis of his and Ralph's financial situation in order to convince Ralph of the advantages of a 401(k) plan.

To perform the analysis, complete the table below assuming that Ralph will contribute 10% of his salary to a 401(k) plan and that both Ralph and Ed claim one exemption (\$3,200) and use the standard deduction (\$5,000).

Yearly Tax Information

Figure	Calculation	Ralph	Ed
Gross Income	Salary, plus interest, plus dividends, plus other income	\$	\$
Pre-Tax Contribution to Tax-deferred Savings Plan		\$	\$
Taxable Income	Gross income less personal exemptions, less deductions (standard OR itemized), less contributions to tax-deferred savings plans	\$	\$
Federal Taxes	Apply taxable income to tax rate table	\$	\$
"Take-Home" Income	Taxable income less federal taxes, plus exemptions, plus deductions	\$	\$

Based on your assessment, explain to Ralph why he should contribute to his employer's 401 (k) plan.

Answers

Romeo and Juliet 401(k): A Tragic Tale of 'Poor' Tax Planning

ACT-1. Yearly Tax Information

Figure	Calculation	Juliet	Romeo
Gross Income	Salary, plus interest, plus dividends, plus other income	\$105,000	\$105,000
Pre-Tax Contribution to Tax-deferred Savings Plan		\$10,000	\$0
Taxable Income	Gross income less personal exemptions, less deductions (standard OR itemized), less contributions to tax-deferred savings plans	\$86,800	\$96,800
Federal Taxes	Apply taxable income to tax rate table	\$18,811	\$21,611
"Take-Home" Income	Gross income, less contributions to tax-deferred savings plan, less federal taxes	\$76,189	\$83,389
After-tax Savings		\$0	\$10,000
Net "Take-Home" Income	Take-home income less after-tax savings	\$76,189	\$73,389

ACT-2. CPA's Financial Assessment

Calculation	Juliet	Romeo
The yearly tax savings as a result of contributing to the 401(k) plan.	\$2,800	N/A
The total taxes paid over 10 years.	\$188,110	\$216,110
The cumulative tax savings as a result of contributing to the 401(k) plan for 10 years.	\$28,000	N/A

Calculation	Juliet	Romeo
Monthly rate of return	1%	.25%
Number of payments over 10 years	120	120
Monthly contribution	\$833	\$833
Value of savings at the end of 10 years	\$191,698	\$116,451

Based on your assessment, what would you tell Juliet about Romeo's financial planning acumen?

Compared to Juliet, and in general, Romeo's financial planning is 'poor.' Juliet, by comparison, lowers her taxable income, increases her net take-home pay and accumulates greater savings by contributing to her employer-sponsored 401(k) plan.

Off Broadway...

Yearly Tax Information

Figure	Calculation	Ralph	Ed
Gross Income	Salary, plus interest, plus dividends, plus other income	\$125,000	\$114,000
Pre-Tax Contribution to Tax-deferred Savings Plan		\$11,000	N/A
Taxable Income	Gross income less personal exemptions, less deductions (standard OR itemized), less contributions to tax-deferred savings plans	\$105,800	\$105,800
Federal Taxes	Apply taxable income to tax rate table	\$24,131	\$24,131
"Take-Home" Income	Gross income, less contributions to tax-deferred savings plan, less federal taxes	\$89,869	\$89,869

Based on your assessment, explain to Ralph why he should contribute to his employer's 401(k) plan.

By contributing to the 401(k) plan, Ralph lowers his taxable income and therefore pays the same amount of taxes that Ed does, despite having more gross income than Ed. The net result is that Ralph and Ed pay the same amount of taxes and have the same take-home pay, but Ralph has also saved \$11,000, whereas Ed has not.