Retirement Planning

SUBMITTED BY: Nina Hoe, University of Pennsylvania

SUBJECT(S): Computation

GRADE LEVEL(S): 9, 10, 11, 12

≡ OVERVIEW:

This lesson begins with a discussion about saving and investing for retirement and why it is important. Students read a relevant Knowledge@Wharton article and learn about the different types of retirement accounts – IRAs, 401Ks and Social Security. They calculate different scenarios for contributing to different retirement accounts.

≡ NBEA STANDARD(S):

- Computation, I. Mathematical Foundations
- Computation, II. Number Relationships and Operations
- Computation, III. Patterns, Functions, and Algebra
- Computation, VI. Problem-Solving Applications

≡ RELATED ARTICLES:

- "The Paycheck Breakdown: What You Earn Is Not What You Keep"
- "Live Long and Prosper: Planning for a Social Security Shortfall"
- "10 Terms New Investors Should Know"

Common Core Standard(s):

- A-SSE.1. Interpret expressions that represent a quantity in terms of its context

- A-CED.1. Create equations and inequalities in one variable and use them to solve problems. *Include equations arising from linear and quadratic functions, and simple rational and exponential functions.*

Objectives/Purposes:

- Understand the different types of retirement accounts.
- Calculate individual/personal contributions to meet retirement goals.
- Calculate employer match contributions.

Knowledge@Wharton Articles:

- "How Much Money Will You Need for Retirement More Than You Think"
- "An End to the Golden Years: Increasing Longevity Changes the Work-leisure Equation"
- "How Well Do 401(k) Plans Work, and Who Benefits Most From Them?"

Activity:

1. Whole Class Discussion (15 mins)

1. What is retirement?
2. Why do people retire?
3. At what age do people usually retire?
4. How do people support themselves in retirement?
5. Why is it important to save for retirement?
6. How much money do you think a person or couple needs to save for retirement?
7. For how many years do you plan (or need to plan) to be in retirement?
8. What are the ways in which people save for retirement?

Play the Wharton Global Youth Program (WGYP) Glossary: Pension

"A pension is money that will be paid to a person when they retire. When I retire, I'll live off money from my pension."

Social security is a federal insurance program that provides benefits to retired people and those who are unemployed or disabled.

Play the WGYP Glossary: 401K

"A 401K is a pension provided by your employer, on which you get a tax break. I put lots of money into my 401K. But when the stock market lost value last year, my 401K got a lot smaller."

An **annuity** is a contract sold by an insurance company under which the person buying the annuity is guaranteed a regular stream of payments over a period of time. There are many kinds of annuities. *Deferred annuities* are designed to accumulate tax-deferred assets over the long term and are usually used to produce a steady income at retirement. *Immediate annuities*, by contrast, begin making annuity payments right away and are typically bought with a lump-sum contribution. There are two types of deferred annuities: *fixed annuities*, which pay a fixed rate of interest guaranteed by the issuing company for a specified period, and *variable annuities*, whose value fluctuates depending upon the performance of the stocks, bonds or other vehicles in which the annuity's principal is invested. The most important function of an annuity is to protect against you outliving your assets. At the end of the day, it's an insurance contract.

Play the WGYP Glossary: IRA:

"IRA stands for Individual Retirement Account, and refers to money that you put away for retirement, on which you get a tax break. It's different from a 401K in part because you only get to put money in a 401K if your employer offers you this option. I'm putting money in my IRA, so that I can have enough money to live on when I retire."

Read the Knowledge@Wharton Article: "How Much Money Will You Need for Retirement More Than You Think" focusing on the last section "How Much Will You Need?"

Student Worksheet

Retirement accounts are different from regular savings or investment accounts for several key reasons. First, earnings from investments within a retirement account are not taxed on a current basis. Additionally, because these accounts are designed to encourage people to save for retirement, early withdraws are not only taxed but penalized as well.

The major difference between 401Ks and IRAs is that 401Ks are set up by employers/companies and IRAs are for individuals only. Both types of accounts have maximum yearly contribution limits – in 2011 the maximum contribution for people under 49 years old to a 401K is $16,500 and $5,000 to an IRA. Additionally, employers sometimes make contributions to employee's 401Ks. For example, some employers may "match" a certain percentage of the employee's decided

contribution. While there is a limit to the amount of money individuals can contribute to their 401Ks, this does not include the additional contributions or matches made by the employers.

Fund managers manage contributions to 401Ks, and employees typically have choices about how their money is invested – into mutual funds or stocks, bonds, or money market funds. Decisions about where and how to invest retirement funds are usually based on the individual's retirement time line. IRA contributions are invested in similar ways.

Theoretically, investing in a retirement fund works in similar ways to compounding interest. Dividends are typically reinvested, and the more time that your money spends in an account, the more time that it has to mature and grow.

2. Small Group/Pair Activity: (*20 mins*)

1. You have decided that you want to contribute the maximum amount to your IRA each year. If you want to make monthly contributions, how much will you need to put away each month? *($416.66)*
2. You have decided that you want to contribute the maximum amount to your 401K each year. You are paid biweekly (every two weeks) and allocate equal amounts of each paycheck towards this account. How much money per paycheck is going towards your 401K? *($634.61)*
3. At Starlight Foods, the company matches employees' 401K contributions 50 cents for every dollar (or at 50%). If you contribute $4,000 per year, how much will your company contribute? *($2,000)*
4. At a telecommunications company in California, the company will match your 401K contributions "dollar-for-dollar" up to 4% of your annual salary of $80,000.

- If you contribute the maximum amount to your retirement fund, how much will your employer contribute? *(Maximum, your employer will pay $3,200 towards your retirement)*
  If you contribute $2,000, how much will your employer contribute? *($2,000)*
  If you contribute $5,000, how much will your employer contribute? *($3,200)*
  If you get a raise and now make $100,000, how will that affect your employer's contributions? *(Employer will now pay $4,000)*

5. At Children's Hospital in Colorado, the company doubles employees' contributions to their 401Ks for up to 5% of their salary. For example if you contribute 3% of your salary, the company

will contribute 6%.

- If you make $100,000 per year, what is the maximum amount that Children's will allow you to contribute? *(2 x (.05 x 100,000) = $10,000)*
- How much money would you need to make in order to contribute the IRS maximum of $16,500 while only contributing 5% of your salary? *($330,000)*
- If you make $70,000 and contribute 3% to your 401K,
  i. How much money will you contribute per year? *($2,100)*
  ii. How much money will your employer contribute per year? *($4,200)*
- If you make $120,000 per year and contribute 5% of your salary to your 401K,
  i. How much money will you contribute per year? *($6,000)*
  ii. How much money will your employer contribute per year? *($12,000)*

6. In the Knowledge@Wharton article "How Much Money Will You Need for Retirement More Than You Think," they suggest that you should plan for 100% of your annual salary for your retirement – meaning that if you make $100,000 while you are working, you should plan to have $100,000 for every year you spend in retirement.

- In this scenario, if you plan to live 30 years in retirement (ages 65 – 95), how much money will you need for that time? *($3,000,000)*
- If you are in the work force for 40 years, does this mean that you have to put away $3,000,000 / 40 = $75,000 per year to meet this goal? Why or why not? *(No, the hope is that over time, with compound interest and investments, the money that you pit away grows.)*

7. When you start working, what will be your approach to your retirement account(s)? Will you plan to put away a fixed amount of money per month? A percentage of your salary at the given time? Write a paragraph describing your approach.

Tying It All Together:

Whole Class Discussion: (*10 mins*)

1. Have students report back on their answers.
2. Why are retirement accounts different from regular savings or investment accounts?
3. What are the differences between IRAs and 401Ks?

4. Why is it important to start contributing as early as possible?

5. How can you best take advantage of a 401K if your employer matches contributions?

Practice Outside of the Classroom: Ask friends and family about their companies' retirement plans.