PowerPoint Slide Speaking Notes

Directions: Review each slide and use the speaking notes as a guide. These notes are also embedded in the PowerPoint slides.

Slide 2: Ask students to answer the questions (as best they can).

Slide 3: Review the correct answers.

Slide 4: Ask students to again consider the first question from the warm-up: Would you rather have $100 today or $100 one year from today? (Most students will clearly prefer $100 now, although some worry they would spend it too quickly and opt for the later time.) Explain to students that $100 in hand right now is worth more than $100 one year from today for several reasons: 1) Inflation will decrease the value of the $100 during the year, meaning $100 won't buy as much one year from now, and 2) The $100 could be invested and earning interest during this time, so there is an opportunity cost of foregone interest. (You might want to point out that there is a risk that you might lose money on an investment.)

Slide 5: This gives examples of how inflation and interest change the value of money over time.

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Slide 7: Explain that economists, business managers and financial planners need to know more specifics about the value of money and how it changes over time. They need to be able to advise people on questions like:
    a. Should I pay off my house now, or invest cash in a stock account?
    b. Should I overpay my income tax during the year, to get a refund? Or underpay and owe money at tax time?
    c. How much should I pay to take over someone's business?

Slide 8: Explain that time value of money can also matter for regular people, when they borrow and lend money. Consider this episode from the TV comedy, Seinfeld. Jerry shows up to help his grandmother open a catsup bottle and finds out a little family secret. Show the Seinfeld clip (3:41) (http://www.yadayadayadaecon.com/clip/61/) and ask students:
    a. How much money did Uncle Leo owe Jerry's mom? ($50)
    b. How many years have passed? (53 years)
    c. What did Jerry's dad say that money was worth now? ($663.45) (you might want to explain that this figure is close but not exactly right – you will do the calculations shortly)
    d. How do you think he figured that out? (ask students to discuss with a partner)

Slide 9: Explain to students that if you invest $100 at a simple interest rate of 5%, at the end of the year you will have your $100 + (0.05)x$100 = $105.

Slide 10: Explain to students that you are going to show them the calculations, but once they understand the calculations, they will also be able to use online calculators. Explain how algebra allows us to pull a common variable out (the $100) and rearrange the equation. Then explain that we won't always have the same starting sum or the same interest rate, which is why we will use X to represent the initial sum (like $50) and r to represent the interest rate. This equation will allow us to calculate the future value of any sum at a specific interest rate.

Slide 11: Explain that luckily, most investments do not pay interest only once! Some pay once a year or once a quarter (every three months) or once a month, or even daily. The more often interest is calculated, the more money your money can earn. Explain that we use an exponent to calculate the number of years or periods that interest will be calculated.

Slide 12: This shows Jerry's problem again. Ask students to calculate the future value of Leo's $50, using this equation. Students might be confused about why the interest rate is 0.05/4. Explain that if the interest rate is 5% per year, but we are calculating interest 4 times a year, we have to divide the interest rate by 4. Otherwise, we would end up seriously overestimating how much the money will grow! (The answer to the calculation question is $696.17) Explain that if you subtract the initial $50, Leo owes Jerry's mom $646.17 in interest.

Slide 13: Link to the Investopedia online calculator. Show students that this calculator will do the math for them, as long as they know the initial sum, the number of time periods, and the interest rate.

Slide 14: Explain to students that there is one more calculation they should know – how to calculate the present value of a future amount. Show students that again, algebra provides the answer. Divide both sides of the equation by $(1 + r)\#$ and you have the calculation for present value of a future amount.

Slide 15: Online calculators

Slide 16: Explain to students that Investopedia also has a calculator for determining present value of a future dollar amount. Remind students of the fourth warm-up question, which asked which of the following has the most value, assuming an interest rate of 10% and annual interest payments:

    a. $800 today
    b. $1000 3 years from now
    c. $2000 10 years from now
    d. $3000 20 years from now

Ask students to work with a partner to answer this question now, using the Investopedia calculator or the equation. (Answers: a. $800, b. $751.31, c. $771.09, d. $445.93; $800 today is the most valuable.)