

Lesson Plan
Financial Algebra
Chapter 3 Banking Services
Unit 3-8 Present Value of Investments
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Title: What do I have to put in the bank today to have “x” amount of money tomorrow?

Students, having created groups of three, will be given various future dollar amounts with varying interest rates and they will determine how much money they will have to invest up front to reach that goal. They will have to represent their findings on poster paper and explain what they discovered to their colleagues. Vocabulary will be explained (connected) after the initial lesson.

- Lesson Objective: **SWBAT**: Calculate the present value of a single deposit investment to invest given a desired future value
- Prerequisite Skills: converting percentage to decimal, exponential valuation,
- Vocabulary: present value, present value of a single deposit investment, present value of a periodic deposit

State Standards addressed: **Write expressions in equivalent forms to solve problems**

Choose and produce an equivalent form of an expression to reveal and explain properties of the quantity represented by the expression.

Analyze functions using different representations

Use the property of exponents to interpret expressions for exponential functions

Having completed their work they will then be taught the formula for future value of periodic deposit investment and will check their answers with the answers they will obtain using the formula.

$$B = \frac{P(1 + r/n)^{nt}}$$

where B = balance at end of investment period
p = periodic deposit amount
r = annual interest rate expressed as a decimal
n = number of times interest is compounded annually
t = length of investment in years

Solve for P

Divide each side by $(1 + r/n)^{nt}$

$$\frac{B}{(1 + r/n)^{nt}} = \frac{P(1 + r/n)^{nt}}{(1 + r/n)^{nt}}$$

$$P = \frac{B}{(1 + r/n)^{nt}}$$

Handouts you will give to the various teams to work out without a formula

Team A

Invest “x” dollar amount at 5% to have \$10,000.00 in 5 years

Before you begin, talk it over and estimate which in dollar amount you would have to invest to achieve your desired goal given the interest rate.

Team B

Invest “x” dollar amount at 6% to have \$10,000.00 in 5 years

Before you begin, talk it over and estimate which in dollar amount you would have to invest to achieve your desired goal given the interest rate.

Team C

Invest “x” dollar amount at 7% to have \$10,000.00 in 5 years

Before you begin, talk it over and estimate which in dollar amount you would have to invest to achieve your desired goal given the interest rate.

Team D

Invest “x” dollar amount at 8% to have \$10,000.00 in 5 years

Before you begin, talk it over and estimate which in dollar amount you would have to invest to achieve your desired goal given the interest rate.

Team E

Invest “x” dollar amount at 4% to have \$10,000.00 in 5 years

Before you begin, talk it over and estimate which in dollar amount you would have to invest to achieve your desired goal given the interest rate.

Name: _____ Per: _____ Date: _____

Quiz 3-8 Present Value of Investments A

You are tired of having to run over to your neighbor's house to play on their X-Box and have decided to buy your own. Since you have learned about how to save periodically you know that if you saved a certain amount each month (or week) you will be able to have \$200 for your X-Box. How much would you have to save weekly or how much would you have to save monthly to be able to save \$200?

Answer both the weekly and monthly periodic payments you would have to make. The second part of this question is if you want to buy an additional \$50 worth of games for your X-Box, how much **more** would you have to save weekly/monthly to reach that plateau of \$250.00? Show all work, formulas you use, and the formulas with the pertinent data inserted.