Sec. 8.3 - Present Value

Learning Goal:

By the end of today, I will be able to recognize when a problem is requesting a "future dollar amount" versus a "present value amount" and know how to calculate the requested item.
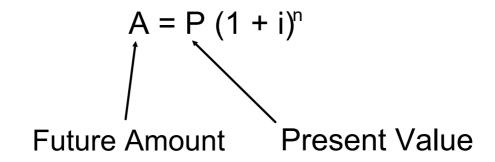
Jan 2-11:52 AM

Warm Up $A = P (1 + i)^n$

Jack has invested $1200.00 in a GIC that pays 4% compounded semi-annually for 6 years. How much will Jack have at the end of the investment?

Jan 2-11:55 AM

When we look at the compound interest equation the "A" term represents the FUTURE amount of the investment or what it will be worth at the end of the investment term.

The "P" term represents the PRESENT DAY amount we have invested, also called the Principal

$$A = P (1 + i)^n$$

Future Amount   Present Value

Jan 2-11:56 AM

Example $A = P (1 + i)^n$

Jack wants to have $40,000 in 8 years from now. He plans to invest in a GIC that pays 8.6% compounded quarter-annually for 8 years. How much will Jack have to deposit now so he has the $40,000 he needs in 8 years?

Jan 2-12:00 PM

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Present Value Equation

The present value equation is simply the compound interest equation rearranged to isolate the P term.

$$A = P (1 + i)^n$$

divide both sides by $(1+i)^n$

Alternate form

$$\frac{A}{(1+i)^n} = P \qquad\qquad \frac{A}{(1+i)^n} = PV$$

use a negative exponent to rearrange the expression

$$A(1+i)^{-n} = P \qquad\qquad A(1+i)^{-n} = PV$$

Jan 2-12:02 PM

Jill needs to have $10,000 in her savings account before she starts college in three years.

How much does she need to invest if she can invest at 9% per year compounded monthly?

Jan 2-12:07 PM

Which is the better 5 year investment for your $1000.00?

Option A - 12% per year, compounded annually

Option B - 10% per year, compound daily

Justify your answer.

Jan 2-12:10 PM

Homework

Page 498-499 # 1,3, 4, 6, 9, 11

Jan 2-12:14 PM