

2-8 PRESENT VALUE OF INVESTMENTS

OBJECTIVES

Calculate the present value of a single deposit investment.

Calculate the present value of a periodic deposit investment.

You will need:

- Student Papers
- Textbook
- Calculator
- Notebook Paper
- Pen or Pencil

Red Items are needed during
the lecture

2 ways reach a financial goal.

1. One single deposit that will earn interest income over time.
2. Make systematic (regularly scheduled) deposits.

Mr. and Mrs. Johnson know that in 6 years, their daughter Ann will attend State College.

She will need about \$20,000 for the first year's tuition.

How much should the Johnsons deposit into an account that yields 1.5% interest, compounded annually, in order to have that amount?

Example 1

Mr. and Mrs. Johnson know that in 6 years, their daughter Ann will attend State College. She will need about \$20,000 for the first year's tuition. How much should the Johnsons deposit into an account that yields 1.5% interest, compounded annually, in order to have that amount?

Which formula on the formula cheat sheet? **2a**

Q1) One or multiple? One: Top

Q2) Which key word? Neither: 2

Q3) What are you looking for? Principal: a

Example 1

Mr. and Mrs. Johnson know that in 6 years, their daughter Ann will attend State College. She will need about \$20,000 for the first year's tuition. How much should the Johnsons deposit into an account that yields 1.5% interest, compounded annually, in order to have that amount?

B = future value \$20,000

p = present value P

r = rate .015

n = number of compounds 1

t = years 6

$$B = p \left(1 + \frac{r}{n} \right)^{nt}$$

Example 1

Mr. and Mrs. Johnson know that in 6 years, their daughter Ann will attend State College. She will need about \$20,000 for the first year's tuition. How much should the Johnsons deposit into an account that yields 1.5% interest, compounded annually, in order to have that amount?

P = present value P

B = future value \$20,000

r = rate .015

n = number of compounds 1

t = years 6

$$20000 = p \left(1 + \frac{.015}{1} \right)^{1 \cdot 6}$$

Note: Desmos will not solve this. Use Mathway or Nspire.

Nspire: Menu, 3, 1

\$18,290.84

Example 2 – You try it!

Raven just got an inheritance and she wants to put enough of it away so that she will have \$100,000 in 10 years in order to buy a home.

How much must she deposit in that account now at a 0.95% interest rate, compounded daily, in order to meet that goal?

Example 2 – You try it!

Raven just got an inheritance and she wants to put enough of it away so that she will have \$100,000 in 10 years in order to buy a home. How much must she deposit in that account now at a 0.95% interest rate, compounded daily, in order to meet that goal?

B = future value \$100,000

P = present value P

r = rate .0095

n = number of compounds 365

t = years 10

$$B = p \left(1 + \frac{r}{n} \right)^{nt}$$

Example 2 – You try it!

Raven just got an inheritance and she wants to put enough of it away so that she will have \$100,000 in 10 years in order to buy a home. How much must she deposit in that account now at a 0.95% interest rate, compounded daily, in order to meet that goal?

$$P = \text{present value } \underline{P} \quad 100,000 = p \left(1 + \frac{.0095}{365} \right)^{365 \cdot 10}$$

$$B = \text{future value } \underline{\$100,000}$$

$$r = \text{rate } \underline{.0095}$$

$$n = \text{number of compounds } \underline{365}$$

$$t = \text{years } \underline{10}$$

\$90,937.41

Nick wants to install central air conditioning in his home in 3 years.

He estimates the total cost to be \$15,000.

How much must he deposit monthly into an account that pays 1.4% interest, compounded monthly, in order to have enough money?

Example 3

Nick wants to install central air conditioning in his home in 3 years. He estimates the total cost to be \$15,000. How much must he deposit monthly into an account that pays 1.4% interest, compounded monthly, in order to have enough money?

Which formula on the formula
cheat sheet? **4a**

Q1) One or multiple? Multiple: Middle

Q2) Which key word? Deposit: 4

Q3) What are you looking for? Periodic: a

Example 3

Nick wants to install central air conditioning in his home in 3 years. He estimates the total cost to be \$15,000. How much must he deposit monthly into an account that pays 1.4% interest, compounded monthly, in order to have enough money?

B = future value \$15,000

p = periodic deposit P

r = rate .014

n = number of compounds 12

t = years 3

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

Example 3

Nick wants to install central air conditioning in his home in 3 years. He estimates the total cost to be \$15,000. How much must he deposit monthly into an account that pays 1.4% interest, compounded monthly, in order to have enough money?

B = future value \$15,000

P = periodic deposit p

r = rate .014

n = number of compounds 12

t = years 3

$$15,000 = \frac{p \left(\left(1 + \frac{.014}{12} \right)^{12 \cdot 3} - 1 \right)}{\frac{.014}{12}}$$

\$408.22

Please work on you assignment.
It is due at the end of next class.

Grade goes here	Read Pg: 115 to 118 Do Pg 119: #2-9	Last First P <u> </u> A: 2-8