**8.3 - Compound Interest: Present Value**

**(Finding P)**

|  |  |  |
| --- | --- | --- |
| **Compounding Method** | **Meaning** | **i** |
| Annually | Once a year | i |
| Semi-Annually | 2 x a year | i/2 |
| Quarterly | 4 x a year | i/4 |
| Monthly | Every month – 12 x a year | i/12 |
| Weekly | Every week – 52 x a yeqr | i/52 |

**Recall from yesterday: A=P(1+i)n**

Therefore,

P = \_\_\_\_\_\_\_\_\_\_\_

**P** is the **principal value** (the value at the **beginning**) of a loan or investment. It is also called the **\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**.

**A** represents the amount a loan or investment is worth after a period of time. It is also known as the **\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.**

Note: The **FUTURE VALUE** always comes **AFTER** the **PRESENT VALUE**

**i** is the interest rate PER \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ period

**n** is the number of \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ periods – the number of times \_\_\_\_\_\_\_\_\_\_\_\_\_\_ is applied.

**Example 1:** Samantha wants to invest enough money today to have $5000 for tuition when she goes to college in two years. If she invests her money at 5% per year, compounded annually, how much does she need to invest?

Step 1: underline the word after compounded

Step 2: Determine i and n

Step 3: What are we looking for A or P?

Step 4: Chose the correct formula.

Step 5: Solve and write a concluding sentence.

**Example 2:** Jackie wants to invest enough money today to have $5000 for tuition when she goes to college in two years. If she invests her money at 5% per year, compounded quarterly, how much does she need to invest?

Step 1: Underline the word after compounded

Step 2: Determine i and n

Step 3: What are we looking for A or P?

Step 4: Chose the correct formula.

Step 5: Solve and write a concluding sentence.

Why is the amount she had to invest lower than in Example 1?

**Example 3:** Israi wants to invest enough money today to have $15 000 to purchase a car in 6 years after college. If she invests her money at 6% per year, compounded quarterly, how much does she need to invest?

**Example 4:** Faisal wants to start a business and needs to borrow some money. His bank will charge 7.2%/a compounded monthly. Faisal wants to repay the loan in 5 years, but doesn't want the amount he pays back to be more than $25 000. What is the maximum amount that he can borrow and how much interest will he pay if he doesn't pay anything back until the end of 5 years?

**Example 5:** Adam is investing $7500 and he would like it to grow to at least $60 000 by the time he retires in 40 years. What annual interest rate, compounded annually, will provide this? Round your answer to two decimal places.

**Example 6:** Jeff is investing $7500 and he would like it to grow to at least $60 000 by the time he retires in 40 years. What annual interest rate, compounded quarterly, will provide this? Round your answer

to two decimal places.

**Homework: page 498 - #3 - 11 (including number 10)**