

## Annual Percentage Yield (APY)

Example 1. You buy a \$2000 certificate of deposit (CD) and at the end of 3 years cash it in for \$2044.40. What is the annual yield on this investment?

Solution. This question is really asking us to find the AVERAGE Annual Yield for the investment. This is the total yield divided by the number of years of deposit.

$$\text{Total Yield} = \frac{2044.40 - 2000}{2000} = \frac{44.40}{2000} = 0.0222.$$

$$\text{Average Annual Yield} = \frac{\text{Total Yield}}{3} = \frac{0.0222}{3} = 0.0074.$$

So the (average) annual yield is 7.4% ■

Example 2. A sum of money is invested for 5 years in a CD paying an APY of 10.3%. At the end of 5 years, you get a check for \$8162.96. How much was the original principal?

Solution. Treat this as an investment with interest rate 10.3% compounded annually. So we use  $F = P(1+r)^t$  with  $F = \$8162.96$ ,  $r = 0.103$ ,  $t = 5$ .

solve for P:  $P(1 + 0.103)^5 = 8162.96$

$$P = \frac{8162.96}{1.103^5}$$

$$P = \$5000.00,$$

rounded to the nearest penny. ■