Ex Suppose you graduate at age 22 and get your first job. You decide to invest \$200 per month (at the end of the month) in a retirement plan that earns 8% compounded monthly. How much will you have if you retire (early) at age 65?

(a). Fill in the table to see how much you have in the account for the first 5 months.

Month	Beginning Balance	Interest Earned	Deposit Made	Ending Balance
1	0	0	200	200
2	200		200	
3			200	
4			200	
5			200	
⋮	⋮	⋮	⋮	⋮

Continue this process for a total of _____ years × 12 months = _____ rows in the table.

An investment of this type that has regular deposits or payments is called an _____ .

When the deposits or payments are made _____ of the payment period,
it is called an _____ .

Luckily, we have a formula to compute the Future Value of an Ordinary Annuity:

$$S = R \cdot \left[\frac{(1+i)^n - 1}{i} \right] \qquad \text{where} \quad \begin{aligned} R &\quad \text{is the amount deposited at the end of each pay period} \\ n = mt &\quad \text{is the number of pay periods} \\ i = \frac{r}{m} &\quad \text{is the interest rate for the period} \end{aligned}$$

(b). Compute the future value of the annuity at age 65 (i.e. 43 years). Also determine how much you contributed.

(c). What if you think you can't afford to make the \$200 monthly payments for the first 10 years that you work. But after that you start making them for the next 33 years. What is the future value of the annuity at age 65? Also determine how much you contributed.

(d). Suppose you only work at this job for 10 years and make the \$200 monthly payments for the entire time. After that you no longer contribute payments, but the account continues to earn 8% compounded monthly. What is the future value at age 65? Also determine how much you contributed.

Summarize these three scenarios.

Ex Suppose you want \$12000 for a down payment on a home in 3 years. How much must you invest at the end of each quarter in an account that earns 4% interest compounded quarterly?

Another type of ordinary annuity is one that _____ at the end of each pay period.

Present Value of an ordinary annuity:

Ex After you retire, you want to receive \$2000 at the end of each month for 25 years. What lump sum must you invest in an annuity that pays 7% compounded monthly?

Ex From the previous contribution examples (p. 2) , how much will the monthly payments be for 25 years after you retire?

(a).

(b).

(c).

Homework: (Slightly different than on the assignment sheet.)
Section 6.3, p. 389: #1-15(odd) [Read through the examples for #15]
Section 6.4, p. 400: #1-11(odd)