

## Practice Final

### #23 | Part A - First 12 Years

Sum of Annuity Due

$$\begin{aligned}\text{Final Amount} &= \text{Principal} \cdot (1 + \text{rate}) \cdot \left( (1 + \text{rate})^{\text{years}} - 1 \right) \div \text{rate} \\ &= \$870 \cdot 1.06 \cdot \left( 1.06^{12} - 1 \right) \div 0.06 \\ &= \$15,557.46\end{aligned}$$

### Part B - Next 38 Years

Compound Interest

$$\begin{aligned}\text{Final Amount} &= \text{Principal} \cdot (1 + \text{rate per payout})^{\# \text{ payouts}} \\ &= \$15,557.46 \cdot 1.06^{38} \\ &= \boxed{\$142,416.91}\end{aligned}$$

## Investing Using

### #30 |

$$\begin{aligned}\text{Final Amount} &= \text{Principal} \cdot (1 + \text{rate}) \cdot \left( (1 + \text{rate})^{\text{years}} - 1 \right) \div \text{rate} \\ &= \$1,600 \cdot 1.08 \cdot \left( 1.08^{31} - 1 \right) \div 0.08 \\ &= \boxed{\$213,141.66}\end{aligned}$$