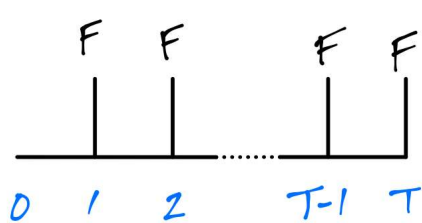


## E: PV refresher 3

### Formula 5: long but finite stream of identical payments

Payment of  $F$  every year from 1 to  $T$



A horizontal timeline starting at 0. Vertical lines representing payments of amount  $F$  are drawn at times 1, 2,  $T-1$ , and  $T$ . Ellipses between 2 and  $T-1$  indicate intermediate payments.

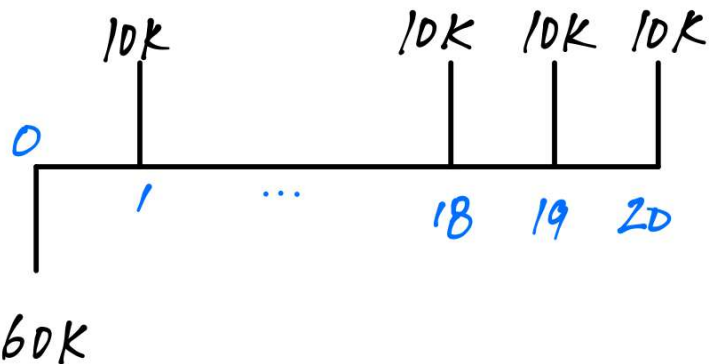
$$PV = \frac{F}{r} \left( 1 - \frac{1}{(1+r)^T} \right)$$

### Example 8:

Cost \$60k at 0

Benefit \$10k/year in years 1-20

$r = 10\%$



$$PV_B = \frac{F}{r} \left( 1 - \frac{1}{(1+r)^T} \right) = \frac{\$10k}{0.1} \left( 1 - \frac{1}{(1.1)^{20}} \right) = \$85k$$

$$PV_C = \$60k$$

$$NPV = \$85k - \$60k = \$25k$$

## Example 9: Exercise on GC