

### Time Value of Money

**Discount rate** =  $(1 + R)^T$  exchange rate of time. R is the discount rate, T is the # of periods

**Compounding** Moving money into the future;  $T > 0$  ; Result is called future value

**Discounting** Moving money to the past;  $T < 0$  ; Result is present value

**Present Value** = Value in the future/  $(1 + R)^T$

Money today is worth more than money tomorrow bc money today can be invested

**Steps to apply time value of money** 1. Draw a timeline and put cash flows on the line 2. Move cash flows to same period by using discount factor. 3. Once all cash flows are in the same period, we can add/ subtract them

**Annuity** Finite cashflows; Equal magnitude;  $(CF/R) \times (1 - (1 + R)^{-T})$

### Annuity

$$PV = \frac{CF}{R} (1 - (1 + R)^{-T})$$

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Page 2 of 2.

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