FSc H01: Economics of FF technologies (I)
(and alternative P)

The cost of lending/borrowing $ = Interest (I)
The amount of $ on which I is paid = Principal (P)

$ \Rightarrow $ Interest rate = \( \% \) of I w/r t P over a specified time period.

\( n \) = # of interest periods (period)

\( S \) = amount owed/owned (principal + interest after period \( n \))

(a) Simple interest: 
\( I = P \cdot i \cdot n \)
\( S = P + I = P \left( 1 + (i \cdot n) \right) \)

e.g., \( S = 1000 \left( 1 + (0.10 \cdot 5) \right) = 1500 \)

\( \Rightarrow \) \( \left( \frac{i}{Yr} \right)^{Yrs} \)

(b) Compound continuous interest: 
\( S = P \exp \left( i \cdot n \right) \)
\( \Rightarrow \)

\( S = P \left( 1 + i \right)^n \)

\( \downarrow \)

Present worth: How much is future $ worth today?

\( PW = P \exp \left( -i \cdot n \right) \) (Continuous)
\( PW = P \left( 1 + i \right)^{-n} \) (Discrete)

At \( i = 10\% \ Yr^{-1} \),
need $265 today to have $1K in 5yrs.

Check!