

## Interest Formulas

- A is P percent of B:

$$\circ \frac{A}{\text{is} = \% \text{ of}} = \frac{PB}{100} \quad \circ$$

- Simple Interest:

$$\circ i = Prt \quad \circ$$

$$\circ A = P + Prt \quad \circ$$

$$A = P(1 + rt)$$

- Compound Interest:

$$\circ A = P (1 + r)^{nt}$$

- Continuously Compounding Interest:  $\circ A = Pe^{rt}$

- Effective Annual Yield:

$$= (1 + \frac{r}{n})^n - 1$$

- Annuities:

$$\circ A = \frac{PMT[(1 + \frac{r}{n})^{nt} - 1]}{\frac{r}{n}}$$

$$\circ PMT = \frac{A(\frac{r}{n})}{[(1 + \frac{r}{n})^{nt} - 1]}$$

- Loans:

$$\circ PMT = \frac{P(\frac{r}{n})}{[1 - (1 + \frac{r}{n})^{-nt}]}$$

### Variable definitions:

- A = future value    □ PMT = payment

- $P$  = present value     $Y$  = yield as a decimal
- $i$  = interest     $e$  = base of  $\ln$
- $r$  = interest rate as a decimal     $n$  = number of compounding
- $t$  = time in years    periods per year

Fall 2017



**M-12**