COMPOUND INTEREST (15a)

... INVOLVES ADDING IN INTEREST AT REGULAR INTERVALS, SO YOU'RE EARNING INTEREST ON INTEREST!

LET: P = INITIAL INVESTMENT ($)
r = ANNUAL INTEREST RATE (eg., 2% = 0.02)
n = # OF TIMES, PER YEAR, THAT INTEREST IS ADDED IN; # OF COMPOUNDING PERIODS / YEAR

MONTHLY: $n = 12$ WEEKLY: $n = 52$ DAILY: $n = 365$

AFTER THIS TIME...	... YOU'LL HAVE THIS MUCH $$ ...
1 COMPOUNDING PERIOD	$P + P \cdot r \cdot \frac{1}{n} = P\left(1 + \frac{r}{n}\right)^1$
2 " "	$P\left(1+\frac{r}{n}\right) + P\left(1+\frac{r}{n}\right) \cdot r \cdot \frac{1}{n} = P\left(1+\frac{r}{n}\right)^2$
⋮	
n = 1 YEAR	$P\left(1+\frac{r}{n}\right)^{n \cdot 1}$
⋮	
$2n$ = 2 YEARS	$P\left(1+\frac{r}{n}\right)^{n \cdot 2}$

$$A = P\left(1 + \frac{r}{n}\right)^{nt}$$

USING THE COMPOUND INTEREST FORMULA (15b)

$$A = P\left(1 + \frac{r}{n}\right)^{nt}$$

EX SUPPOSE $1000 IS INVESTED AT 3% ANNUAL INTEREST, COMPOUNDED DAILY, FOR 5 YEARS. HOW MUCH MONEY WILL YOU HAVE?

$P = 1000$, $r = 0.03$, $n = 365$, $t = 5$

$$A = 1000\left(1 + \frac{0.03}{365}\right)^{365 \cdot 5} = \$1,161.83$$

BE ABLE TO DO THIS ON YOUR CALCULATOR!!