$A(0) = \$1000$
$A(1) = A(0) + 0.06A(0) = A(0)(1 + 0.06) = A(0)(1.06) =$ ________
$A(2) = A(1) + 0.06A(1) = A(1)(1 + 0.06) = A(1)(1.06) = A(0)(1.06)^2 =$ ________
$A(3) = A(2) + 0.06A(2) = A(2)(1 + 0.06) = A(2)(1.06) = A(0)(1.06)^3 =$ ________
⋮
$A(8) = A(7) + 0.06A(7) = A(7)(1 + 0.06) = A(7)(1.06) = A(0)(1.06)^8 =$ ________
⋮
$A(t) = A(0)(1.06)^t = 1000(1.06)^t$

b. **$1000 is placed in an account that pays interest at the rate of 6% per annum compounded at the end of each month. Let t = the number of years since the $1000 was deposited, and let A(t) = the value of the account in dollars after t years. Assume that after the initial deposit no further deposits or withdrawals are made.**

Since we calculate interest payments at the end of each month we note that the monthly rate corresponding to a per annum rate of 6% is 6%/12 or ½%. Considering the account's status at the end of each month we obtain the following:

$A(0) = \$1000$
$A(1/12) = A(0)(1 + 0.005) = \$1000(1.005) =$ ________
$A(2/12) = A(0)(1.005)^2 = \$1000(1.005)^2 =$ ________
⋮
$A(1) = A(0)(1.005)^{12} = \$1000(1.005)^{12} =$ ________
⋮
$A(t) = A(0)(1.005)^{12t} = \$1000(1.005)^{12t}$

Under this compounding scheme about how long will it take for the value of the account to double?

c. **$1000 is placed in an account that pays interest at the rate of 6% per annum compounded n times per year. Let t = the number of years since the $1000 was deposited, and let A(t) = the value of the account in dollars after t years. Assume that after the initial deposit no further deposits or withdrawals are made.**

Since there are n compounding periods per year the interest rate per period is 6%/n, or 0.06/n, and in t years there will be nt interest calculations. So, in this case we have

$A(0) = \$1000$
$A(t) = A(0)(1 + 0.6/n)^{nt}$

Suppose we have daily compounding. Calculate the value of $A(1) = \$1000(1 + 0.06/360)^{360(1)}$.

d. **In general, if A(0) is placed in an account that pays interest at the rate of r per annum compounded n times per year, then A(t) = the value of the account in dollars after t years is given by** $A(t) = A(0)(1 + r/n)^{nt}$. **Suppose A(0) = 1000, r = =.04, and n = 360. Find A(1) and A(8).**