thus, Award #1: in 8 years

$$M = \$48,466.50\left(1+\frac{0.04}{4}\right)^{4(8)} = \boxed{\$66,638.56}$$

Award #2:

$$M = 51,277.41\,(1.01)^{32} = \boxed{\$70,503.40}$$

#2 a) $M = M_0\left(1+\frac{r}{n}\right)^{nt}$

The EFFECTIVE interest rate would be larger. If the interest is compounded more often ($n > 1$), you will earn more money.

b) the present value of \$1000 in T years is larger. Having a given amount of money earlier will always have a higher present value.

c) \$1000 in T years at 4% is larger

$$PV\ @\ 4\% = \frac{1000}{(1.04)^T} \Leftarrow \text{bigger}$$

$$PV\ @\ 5\% = \frac{1000}{(1.05)^T}$$

#13 a) Amount of drug $\boxed{D = 3\left(\frac{1}{2}\right)^{\frac{t}{7}}}$

$\frac{t}{7}$ = weeks elapsed

b) $3\left(\frac{1}{2}\right)^{\frac{4}{7}} + 3\left(\frac{1}{2}\right)^{3/7} + 3\left(\frac{1}{2}\right)^{2/7} + 3\left(\frac{1}{2}\right)^{1/7} + 3$ ← 1st term

geometric series with $a = 3$ $r = \left(\frac{1}{2}\right)^{1/7}$

$$S = \frac{3 - 3\left(\frac{1}{2}\right)^{5/7}}{1 - \left(\frac{1}{2}\right)^{1/7}} \approx \boxed{12.4 \text{ grains}}$$