Compound Interest

Oct 18/16

Annual Compound Interest: Interest calculated on the initial principal And the accumulated interest

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

A = The future amount of your investment

P = The principal (your starting amount of money)

r = The interest rate *always in decimal form

n = The number of times that the interest is compounded in one year

t = The number of years that money is invested

1) $52,400 at 12% compounded quarterly for 2 years

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

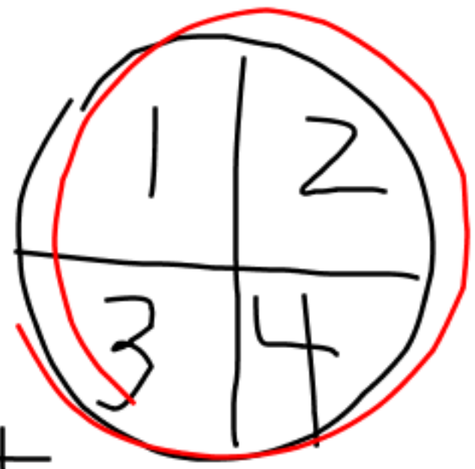
$P = 52,400$

$\frac{r}{n} = \frac{0.12}{4} = 0.03$

$nt = (4)(2)$

$= 8$

12 | 12



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

$A = 52,400(1+0.03)^{4x2}$

$A = 52,400(1.03)^{8}$

$A = \$66,378.75$

4) $21,000 at 7% compounded annually for 8 years

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

$P = 21{,}000$

$\frac{r}{n} = \frac{0.07}{1} = 0.07$

$nt = (1)(8)$

$n \quad t$

$= 8$

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

$A = 21000\left(1 + 0.07\right)^{1\times 8}$

$A = 21000(1.07)^{8}$

$A = \$36{,}081.989$

$A = \$36{,}081.91$

a) $25,000 at 5% compounded semiannually for 2 years

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

$P = 25{,}000$ $\quad .05$

$\frac{r}{n} = \frac{0.05}{2} = 0.025$

$nt = (2)(2)$

n

t

$= 4$

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

$A = 25000(1+0.025)^{2\times 2}$

$A = 25000(1.025)^{4}$

$A = \$27{,}595.32$

Compounded . . . .

annually → 1 ∴ n = 1

semiannually → 2 ∴ n = 2

quarterly → 4 ∴ n = 4

monthly → 12 ∴ n = 12

daily → 365 ∴ n = 365

∴ = therefore

Homework → choose 3 from the front + 4 from the back