

Compound Interest: $P(1 + \frac{r}{n})^{n \cdot t}$

P = Principal (initial amount)

r = interest rate (decimal)

n = # compounded in year

t = # years

Example 2: Find the answers to the word problems using the compound interest formula.

a) When your friend was born, her parents deposited \$2000 into an account paying 4.5% interest compounded monthly. What will the account balance be after 18 years?

Initial Deposit (P): 2000

Interest Rate (r): 0.045 $4.5 \div 100$

Number of times interest is compounded (n): 12

Time (t): 18

Formula: $(2000)(1 + \frac{0.045}{12})^{12 * 18}$

Answer: \$4489.01

Fraction
ALPHA Y=

b) You deposit \$775 into an account earning 4.25% compounded annually. What is the balance after 12 years?

$$P=775 \quad r=0.0425 \quad n=1 \quad t=12$$

4.25 ÷ 100 once a year

$$(775)\left(1 + \frac{0.0425}{1}\right)^{1 \cdot 12} = \$1277.07$$

c) After depositing \$3500 into a bank account that earns 6.75% compounded monthly, how much do you have after 6 months?

$$t=0.5$$

$$\$3619.80$$

d) Your friend puts \$20 into an account that earns 5% compounded daily. How much does she have after two years?

$$n=365 \quad \$22.10$$