Part II: Compound Interest

19. After 6 months of investing, your portfolio has a value of $10,600. You started with $9,000. What is the percentage increase in your portfolio?

RULE: $\frac{(E-S)}{S}$

$\frac{10600-9000}{9000} = \frac{1600}{9000} = .1777 =$ **17.8% GAIN**

20. You bought 600 shares of Microsoft Corporation 5 weeks ago at $25.15 per share. Today the share price is $20.65. How much money have you lost?

BOUGHT $600 \times 25.15 = 15,090$

SOLD $600 \times 20.65 = 12,390$

$15,090 - 12390 =$ **$2,700 LOST**

21. An amount of $1,750.00 is deposited in a bank paying an annual interest rate of 5.7 % compounded quarterly. Find the balance after 4 years.

$A = 1750(1+.057/4)^{(4\cdot4)}$

$A = \$2,194.61$

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

22. An amount of $5,000.00 is deposited in a bank paying an annual interest rate of 6% compounded daily. Find the balance after 3 years.

$A = 5000(1+.06/365)^{(365\cdot3)}$

$A = \$5,985.998 \longrightarrow$ **$5,986.00**

23. An amount of $4,500.00 is deposited in a bank paying an annual interest rate of 3.7%, compounded **continuously**. Find the balance after 4 years.

$A = 4500 \cdot e^{.037 \times 4}$

$A = \$5,217.81$

$A = P \cdot e^{rt}$ (CONTINUOUS INTEREST)

24. Give an example of converting an exponential form equation to logarithm form.

$a^x = b \longrightarrow \log_a b = X$

RULE EXPONENT: $a^x = b$ LOG $\longrightarrow \log_a b = X$

25. How long would it take to double $600 at 6.2% annual interest compounded annually?

$\frac{1200}{600} = \frac{600(1+.062)^t}{600}$

$2 = 1.062^t$

$1.062^t = 2$

$\log_{1.062} 2 = t$

$\frac{\log 2}{\log 1.062} = t =$ **11.5 YRS**

$A = P(1+r)^t$ RULE: LOGS & $a^x = b$ $\log_a b = X$ $\frac{\log b}{\log a} = X$

26. You are purchasing a car for $18,000 at 5.2% interest and financing this purchase over a period of 5 years. What would be your monthly payment?

$P = 18000 \quad r = .052 \quad t = 5 \longrightarrow M = 60$

$MP = \frac{18000(.052/12)}{(1-(1+.052/12)^{-60})} =$ **$341.33**

$MP = \frac{P(r/12)}{(1-(1+r/12)^{-nt})}$