Warm Up

- Do algebra review on page 105
- #'s1-10

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Compound Interest

Goals

- Compute the total interest when compounded:
  - Annually
  - Semiannually
  - Quarterly
  - Monthly
- Use the compound interest formula

Compound Interest

- Interest paid on the principal and previously paid interest, assuming that interest is left in the account

Compounding periods

- Annually=1 time per year
- Semiannually=2 times per year
- Quarterly=4 times
- Monthly=12 times
- Weekly=52 times
- Daily=365 times
- Hourly=?
- Continuously=?

Rule of 72

- Method for determining the time it will take an investment to double in value at a given interest rate.
- Divide 72 by the interest rate (times 100), the quotient is the doubling time.

Why 72??

- $2p=p(1+r)^t$
- $2=(1+r)^t$

$$t = \frac{\log 2}{\log 1 + r}$$

Rate	Actual Years	Rule of 72
0.25%	277.605	288.000
0.5%	138.976	144.000
1%	69.661	72.000
2%	35.003	36.000
3%	23.450	24.000
4%	17.673	18.000
5%	14.207	14.400
6%	11.896	12.000
7%	10.245	10.286
8%	9.006	9.000
9%	8.043	8.000
10%	7.273	7.200
11%	6.642	6.545
12%	6.116	6.000
15%	4.959	4.800
18%	4.188	4.000

Example

- How long will it take for $2000 to double if it gains an annual interest of 10%?

Example

- How long will it take for $2,000,000,000,000,000 to double if it gains an annual interest of 3.6%?

Compound Interest

- $A=p(1+r/n)^{nt}$
- A= Balance
- P= principal
- R= annual interest rate
- N=number of times compounded per year
- T= time in years

Example

- How much will a $15,000 CD be worth in 6 years if it earns 8% annual interest and is compounded quarterly?

Example

- How much will a $3,456 CD be worth in 7 years if it earns 2.1% annual interest and is compounded monthly?

Example

- Fred wants to know how long it will take for his $4000 investment to reach $1 million if it gains 7.2% interest.

You could use logs….

- Or use the rule of 72

Assignment

- Page 110-111 TYS 1-8