Algebra Ch. 8

Algebra 8-1: Compound Interest

Warm-Up

Change from a percent to a decimal.

1. 25% .25
2. 2.5% .025
3. .25% .0025
4. .025% .00025
5. .0025% .000025

Move decimal 2 places left!

Vocab	Definition
~~principal~~ principle	the amount of money you put in an account
interest	* money earned (paid by bank to you)
annual yield (i)	• interest rate Ex) 2.5% = .025 • percentage
compound interest	• interest earns interest • Total = principle $(1+\text{annual yield})^{\text{years}}$ • $T = P(1+i)^n$

Ax^n — base, exponent, coefficient

Ex: $10x^4$ $x^0 =$ 1 $x^4 =$ $x \cdot x \cdot x \cdot x$

decimal

$7^0 = 1$ $8^0 = 1$

Examples

1. If X dollars are invested in an account at 5.2% annual yield, what will the value of the account be at the end of a year?

principle · .052 $T = X(1.052)$ $n = 1$

$T = P(1+i)^n$

$T = X(1+.052)^1$

2. Suppose you deposit \$150 in a savings account upon which the bank pays an annual yield of 3%. Make a table to show how much money will be in the account each year until the 4th year.

3% = .03

Year	Calculation	Simplify	Total \$
1	$T = 150(1+.03)^1$	$150(1.03)$	\$154.50
2	$T = 150(1+.03)^2$	$150(1.03)^2$	\$159.14
3	$T = 150(1+.03)^3$	$150(1.03)^3$	\$163.91
4	$T = 150(1+.03)^4$	$150(1.03)^4$	\$168.83

3. Suppose $500 is deposited in an annuity with a 7% annual yield. If there are no deposits or withdrawals, how much will be in the account after 8 years?

$T = P(1+i)^n$

$T = 500(1+.07)^8 = \$859.09$

4. A baby's grandparents invest $1000 on the day their grandchild is born.

   1. How much is the investment worth on the grandchild's 18th birthday if it earns 6.3% annual yield?

$T = P(1+i)^n$

$T = 1000(1+.063)^{18} = \$3,003.30$

   2. How much interest was earned?

$3,003.30 - 1,000.00 = \$2,003.30$ interest earned