

Name _____

Date _____



Challenge

Savings Account Interest

Interest on money in a savings account can be calculated by using polynomials. Banks now use computers to make these computations quickly. Here is an activity to help you understand the methods computers use to calculate interest.

Suppose that you were given \$25 on New Year's Day each year for the past five years. If you saved the money and received an annual simple interest rate of 6%, how much money is in your account now?

- | | | | | | | | | | | | | |
|-------------|----------------|---|----------------|---|----------------|---|--------------|-------|----------|-------|----------|-------|
| 1. 1st year | \$25 | | | | | = | \$25 | _____ | | | | |
| 2. 2nd year | $\$25(1.06)$ | + | \$25 | | | = | \$51.50 | _____ | | | | |
| 3. 3rd year | $\$25(1.06)^2$ | + | $\$25(1.06)$ | + | \$25 | = | \$79.59 | _____ | | | | |
| 4. 4th year | $\$25(1.06)^3$ | + | $\$25(1.06)^2$ | + | $\$25(1.06)$ | + | \$25 | = | \$109.37 | _____ | | |
| 5. 5th year | $\$25(1.06)^4$ | + | $\$25(1.06)^3$ | + | $\$25(1.06)^2$ | + | $\$25(1.06)$ | + | \$25 | = | \$140.93 | _____ |
| | 1st year | | 2nd year | | 3rd year | | 4th year | | 5th year | | | |

Note that when you multiply by 1.06 you are calculating the interest for one year.

Let $x = 1.06$. You can represent the amount of money for the 5th year as $25x^4 + 25x^3 + 25x^2 + 25x + 25$.

6. Evaluate $25(x^4 + x^3 + x^2 + x + 1)$ for $x = 1.06$. \$140.93
7. Which calculation is easier? 2nd one Why? Fewer keystrokes.