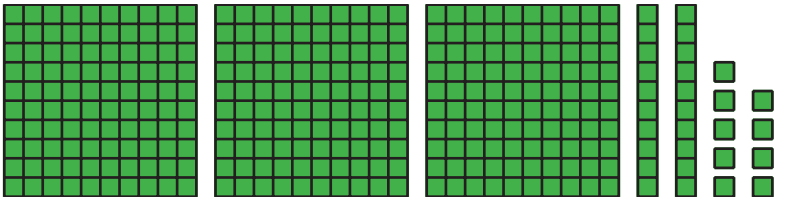
Unit 2 Lesson 2: Funding the Future

1 Notice and Wonder: Writing Numbers (Warm up)

Student Task Statement

What do you notice? What do you wonder?



$300 + 20 + 9$

3 100s, 2 10s, 9 1s

$3(10^2) + 2(10^1) + 9(10^0)$

2 Polynomials in the Integers

Student Task Statement

Consider the polynomial function p given by $p(x) = 5x^3 + 6x^2 + 4x$.

1. Evaluate the function at $x = -5$ and $x = 15$.
2. How does knowing that $5{,}000 + 600 + 40 = 5{,}640$ help you solve the equation $5x^3 + 6x^2 + 4x = 5{,}640$?

3 A Yearly Gift

Student Task Statement

At the end of 12th grade, Clare's aunt started investing money for her to use after graduating from college four years later. The first deposit was \$300. If r is the annual interest rate of the account, then at the end of each school year the balance in the account is multiplied by a growth factor of $x = 1 + r$.

1. After one year, the total value is $300x$. After two years, the total value is $300x \cdot x = 300x^2$. Write an expression for the total value after graduation in terms of x.
2. If Clare's aunt had invested another \$500 at the end of her freshman year, what would the expression be for the total value after graduation in terms of x?

   Pause here for a whole-class discussion.

3. Suppose that \$250 was invested at the end of sophomore year, and \$400 at the end of junior year in addition to the original \$300 and the \$500 invested at the end of freshman year. Write an expression for the total value after graduation in terms of x.
4. The total amount y, in dollars, after four years is a function $y = C(x)$ of the growth factor x. If the total Clare receives after graduation is $C(x) = 1{,}580$, use a graph to find the interest rate that the account earned.