## 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 $300x⋅x=300x^{2}$. 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.
1. 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 $x$.
2. 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.



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