Figure 8.28. Beyond Linear: Working with Polynomials Lesson Plan –Day 3

Date: 10/26

Standards:
Understand that polynomials form a system analogous to the integers, namely, they are closed under the operations of addition, subtraction, and multiplication; add, subtract, and multiply polynomials.

Use the structure of an expression to identify ways to rewrite it.

Prove polynomial identities and use them to describe numerical relationships.

Highlighted Standards for Mathematical Practice:
SMP2: Reason abstractly and quantitatively
SMP5: Use appropriate tools strategically.
SMP6: Attend to precision.
SMP7: Look for and make use of structure.
SMP8: Look for and express regularity in repeated reasoning.

K: Strategies for operations with polynomials (e.g. lattice multiplication)
Binomial expansion using Pascal's triangle

U: Polynomials are very similar to integers. Arithmetic with polynomials works in the same ways as arithmetic with integers. They are closed in addition, subtraction, and multiplication, just as are integers. (Algebra is grown up arithmetic.).

D: Operate on polynomials using multiple strategies.
Use Pascal's triangle to expand binomials.
Explain how operating on polynomials is like operating on integers.

Whole Class:

1. Back-to-Back white board review of multiplication
    a. Double digit multiplication using lattice and box methods
    b. Binomial multiplication with distributive property (FOIL for most)
    c. Triple digit multiplication with standard algorithm
2. Introduce methods of multiplication with polynomials with back-to-back practice
    a. Distributive Property (quick because already know binomial. Show trinomial)
    b. Area or box / Like lattice when you add diagonal boxes
    c. Standard algorithm (If time permits)
3. Show binomial raised to a power
    a. $(a + b)^2$ – they do on white boards using whatever method
    b. $(a + b)^3$ – take solution from a. and multiply again

c. show products of $(a + b)^4$ and $(a + b)^5$
d. See what patterns students recognize in the products based on the powers
e. Pascal's Triangle