

Date:

Title:

(A) Lesson Objectives:

- a. Introduce different methods for multiplying binomials.
- b. Algebraically verify the product of polynomial multiplication.
- c. Graph the product of polynomial multiplication.
- d. Do area and perimeter and volume and surface area calculations using binomial multiplication.

(B) Binomial Distribution: An Example with Numbers:

- a. Multiply 82×73 without a calculator

Using Long Multiplication

Using Grids

Using binomial distribution

(C) In Class Practice: Multiply the binomials $(2x + 3)$ with $(x - 4)$ using:

- a. Long Multiplication
- b. Using Grids:
- c. Using binomial distribution

(D) Verifying: Polynomial Evaluations: Working with the binomials $(2x + 3)$ and $(x - 4)$ and the product

- a. Evaluate $(2x + 3)$ when $x = 2$: _____.
- b. Evaluate $(x - 4)$ when $x = 2$: _____.
- c. Evaluate $(2x + 3)(x - 4)$ when $x = 2$: _____.
- d. Evaluate $(2x^2 - 5x - 12)$ when $x = 2$: _____.
- e. What do you notice? _____.
- f. What does the verification MEAN? _____.
- g. WHY does it work? _____.

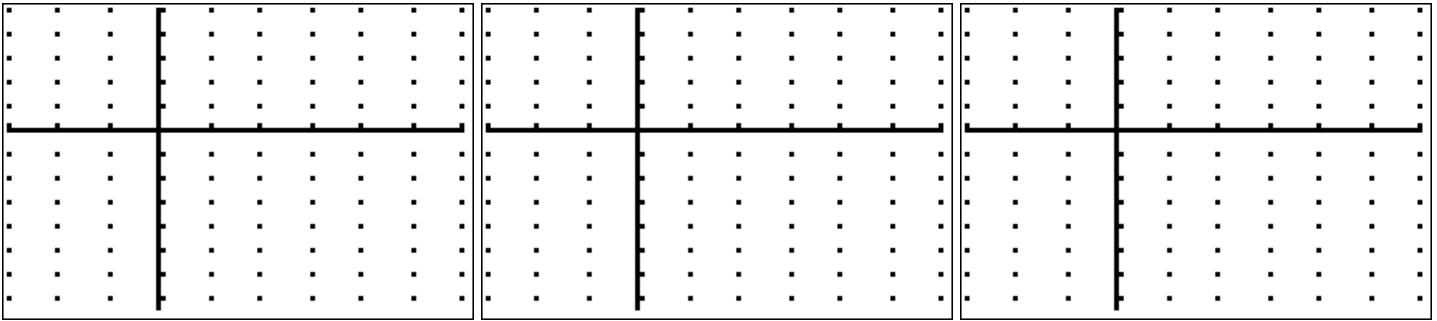
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(E) **Graphical Connection:**

- Graph the polynomial $y = 2x + 3$
- Graph the polynomial $y = x - 4$
- Now graph the product $y = (2x + 3)(x - 4)$
- What does a second degree polynomial look like?

```
WINDOW
Xmin=-3
Xmax=6
Xscl=1
Ymin=-15
Ymax=10
Yscl=2
Xres=1
```



(F) **Applications:**

- A rectangle has a width of $2x - 4$ and a length of $5x + 1$. Determine an expression representing:
 - the perimeter of the rectangle
 - the area of the rectangle
 - Determine the area and perimeter if $x = 12$ cm.
- A cube has side length of $2x + 3$ cm. Determine an expression representing:
 - The volume of the cube.
 - The surface area of all 6 faces.
 - Determine the volume and surface area if $x = 6$ cm.

(G) **Algebraic Examples – In Class**

Level 1: <http://www.teacherweb.com/NY/Arlington/AlgebraProject/U6L5MultiplyingPolynomials.pdf>

Level 2: <http://www.kutasoftware.com/FreeWorksheets/Alg1Worksheets/Multiplying%20Polynomials.pdf>

(H) **Homework/Resources**

- **HW: from Textbook** → **Sec 3D**, p77, Q2hikl, Q3cef, Q3ef AND **Sec 3E**, p79, Q2afh, Q3ef AND **Sec 3F**, p81, Q3ae, Q4adh, Q6acegc
- Video help from OnlineMathLearning with inequalities:
 - o <http://www.onlinemathlearning.com/multiplying-polynomials-techniques.html>
- Reading from PurpleMath
 - o <http://www.purplemath.com/modules/polymult.htm>