MPM 2D **Quiz: Polynomials, Expanding & Factoring**

Complete the following quiz on lined paper.

1. Expand and simplify each of the following. Show your steps.

a) $(x + 3)(x + 9)$

$= x^2 + 9x + 3x + 27$

$= \mathbf{x^2 + 12x + 27}$

b $(x - 2)(x + 2)$

$= x^2 + 2x - 2x - 4$

$= \mathbf{x^2 - 4}$

c) $(x - 3)(x - 4)$

$= x^2 - 4x - 3x + 12$

$= \mathbf{x^2 - 7x + 12}$

d) $(x + 3)(3x + 11)$

$= 3x^2 + 11x + 9x + 33$

$= \mathbf{3x^2 + 20x + 33}$

e) $2(x - 1)(3x + 2)$

$= 2(3x^2 + 2x - 3x - 2)$

$= 2(3x^2 - x - 2)$

$= \mathbf{6x^2 - 2x - 4}$

f) $(2x + 3y)(3x + 4y)$

$= 6x^2 + 8xy + 9xy + 12y^2$

$= \mathbf{6x^2 + 17xy + 12y^2}$

g) $(2x + 1)^2$

$= (2x + 1)(2x + 1)$

$= 4x^2 + 2x + 2x + 1$

$= \mathbf{4x^2 + 4x + 1}$

2. Factor each of the following polynomials. Show your steps. **Recall:** Look for common factors, first, then proceed with another method!

a) $b^2 + 11b + 30$

$\mathbf{= (b + 5)(b + 6)}$

b) $a^2 - 4a - 5$

$\mathbf{= (a - 5)(a + 1)}$

c) $3b^2 + 24b + 45$

$= 3(b^2 + 8b + 15)$

$\mathbf{= 3(b + 3)(b + 5)}$

d) $14z^2 - 28z$

$\mathbf{= 14z(z - 2)}$

e) $3qf^3 - 27qf$

$\mathbf{= 3qf(f^2 - 9)}$

3. Answer each of the following:

a) Which of the following IS a *polynomial*? $\mathbf{-7x^5 - 2x^4 + x}$

$4^x + 3$

$-7x^5 - 2x^4 + x$

$2x^2 + \sqrt{x}$

b) What is the *degree* of the following polynomial? **4** (degree of a polynomial is the highest exponent on the variable)

$7x^3 + 5x - 2x^4 + 1 - 3x^2$

c) Arrange the following polynomial in *descending* order of degree. $\mathbf{-2x^4 + 7x^3 - 3x^2 + 5x + 1}$

$7x^3 + 5x - 2x^4 + 1 - 3x^2$

d) In the following polynomial, what is the *coefficient* of the *linear* term? **2** (the linear term is $2x$)

$5 + 2x - 7x^2$

4. How do you think you did on this quiz? Use a table, like the one below, to organize your thoughts about the topics on this quiz and your learning thus far.

Still learning…	Almost there…	Got It!