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Date: Answer Key

Multiplying Polynomials

Multiply the following polynomials.

$$1. x(x + x^2) = x^2 + x^3$$

$$2. (x + 1)(2x + 5) = \boxed{2x^2} + \boxed{5x} + \boxed{2x} + 5 \\ = 2x^2 + 7x + 5$$

$$3. (5x + 5)^2 = (5x+5)(5x+5) \\ = \boxed{25x^2} + \boxed{25x} + \boxed{25x} + 25 \\ = 25x^2 + 50x + 25$$

$$4. (a^2 + b^2)c^2 = a^2c^2 + b^2c^2$$

$$5. (2x + 3)(9 + 4x) = \boxed{18x} + \boxed{8x^2} + \boxed{27} + \boxed{12x} \\ = 8x^2 + 30x + 27$$

$$6. (3x + y)(1 + 2y) = 3x + 6xy + y + 2y^2 \\ = 3x + 6xy + 2y^2 + y$$

$$7. (x + 1)(1 + y) = x + xy + 1 + y \\ = x + xy + y + 1$$

$$8. (x^2 + x)x^3 = x^5 + x^4$$

$$9. (x + x^3)2x = 2x^2 + 2x^4$$

$$10. (y + 3y^2)(2y^2 + y) = \boxed{2y^3} + \boxed{y^2} + \boxed{6y^4} + \boxed{3y^3} \\ = 6y^4 + 5y^3 + y^2$$