

Pre-Algebra

Essential Question: How do we multiply monomials and polynomials?

Do Now: Write as a single power.

a. $2^3 \cdot 2^3$

2^6

b. $3^5 \cdot 3^2 \cdot 3^1$

3^8

c. $x^4 \cdot x^5$

x^9

d. $-7x^4 \cdot 4x^5$

$-28x^9$

Multiplying Monomials

- Multiply coefficients.
- Multiply variables/powers (add exponents if bases are the same).

1. $3(2x)$

$6x$

2. $4(6x^2)$

$24x^2$

3. $7(2xy)$

$14xy$

4. $(3x)(2x)$

$6x^2$

5. $(-4x^2)(5x)$

$-20x^3$

6. $(9x^3)(3x^2)$

$27x^5$

7. $(x^2y^3)(2x^3y^4)$

$2x^5y^7$

8. $(4xy)(6x^2)$

$24x^3y$

9. $-4a(7ab)$

$-28a^2b$

10. $(6a^4b)(2ab^9)(3a^3)$

$36a^8b^{10}$

11. $(-2x)^3$

$-8x^3$

12. $(-7ab)(4b^2)$

$-28ab^3$

Multiplying Monomials & Polynomials

- Use the distributive property.
- Add exponents of like bases.

13. $2x(3x + 4)$

$6x^2 + 8x$

14. $-4x^2(x^3 + 3x^2 - 1)$

$-4x^5 - 12x^4 + 4x^2$

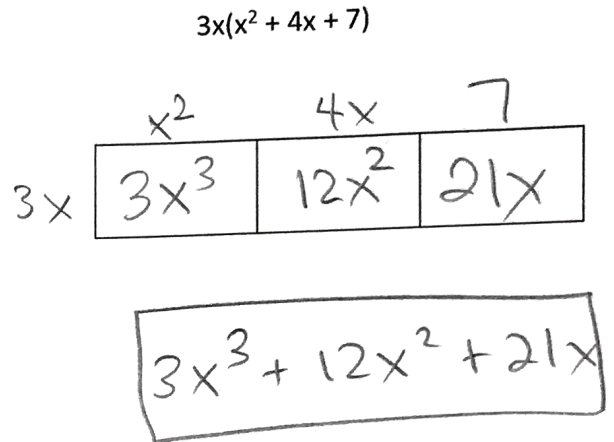
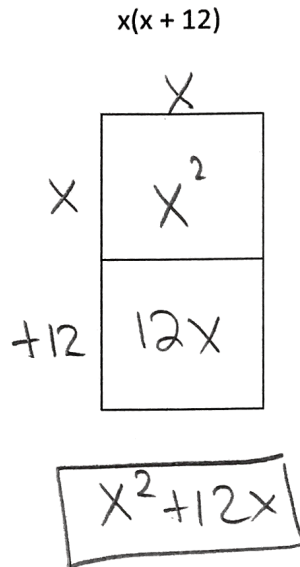
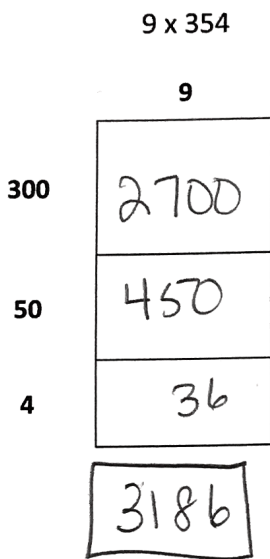
15. $x^2y(2x^2y + 9xy - 3xy^3)$

$2x^4y^2 + 9x^3y^2 - 3x^3y^4$

THINK ABOUT THIS....

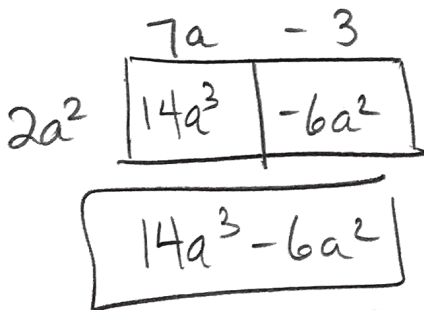


How can we represent multiplying a polynomial by a monomial with a diagram?

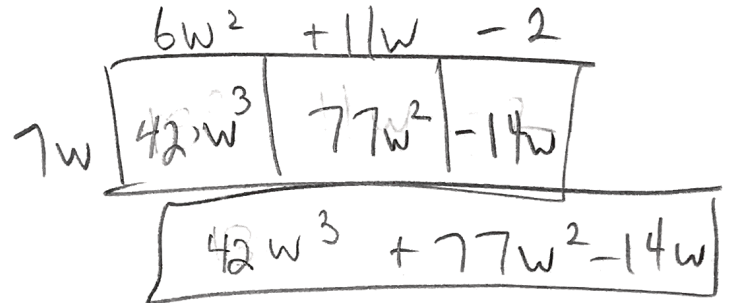


Create diagrams in order to multiply the following monomials by polynomials.

16. $2a^2(7a - 3)$



17. $7w(6w^2 + 11w - 2)$



Turn and Talk:



For A - C, write down a product of a monomial and polynomial that is equivalent to the expression.

A. $2x^4 + 2x^5 + 2x^{10}$

$2x^4(1 + x + x^6)$

B. $42w^3 - 14w + 77w^5$

$7w(6w^2 - 2 + 11w^4)$

C. $z^2a + z^3b$

$z(z^2a + z^3b)$