Lesson 1.7- SWBAT multiply polynomial expressions.

Kickoff-

1) Simplify: $(6x^3 - 3x + 7) + (-x^3 + 3x^2 - 5x + 12)$ 2) If $f(x) = 2x^2 - 5x + 1$ find $f(3)$

$$x^3 - 3x^2 + 5x - 12$$
$$+ 6x^3 \quad - 3x + 7$$
$$\overline{7x^3 - 3x^2 + 2x - 5}$$

$f(3) = 2(3)^2 - 5(3) + 1$

$f(3) = 4$

When multiplying polynomials:

1) Distribute (multiply each coefficient)
2) Combine Like Terms

***Important rule: Add the exponents

Examples:

1) $2x(5x^2 - 3)$

$10x^3 - 6x$

2) $-3x(x - 4)$

$-3x^2 + 12x$

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3) $(4x + 2)(x + 5)$

$4x^2 + 20x + 2x + 10$

$4x^2 + 22x + 10$

	$4x$	$+2$
x	$4x^2$	$+2x$
$+5$	$+20x$	$+10$

$4x^2 + 22x + 10$

4) $(6n - 5)^2$

$(6n - 5)(6n - 5)$

$36n^2 - 30n - 30n + 25$

$36n^2 - 60n + 25$

Practice:

5) $-5x(x^2 - 2x + 3)$

$-5x^3 + 10x^2 - 15x$

6) $(4n + 1)(2n + 6)$

$8n^2 + 26n + 6$

7) $(8a - 3b)(2a - 9b)$

$16a^2 - 78ab + 27b^2$

8) $(-3y - 7)(y - 6)$

	$-3y$	-7
y	$-3y^2$	$-7y$
-6	$18y$	42

$-3y^2 + 11y + 42$

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9) $(2x^2 + 7x)^2$

$(2x^2 + 7x)(2x^2 + 7x)$

$4x^2 + 14x^3 + 14x^3 + 49x^2$

$4x^2 + 28x^3 + 49x^2$

10) $2x^3(3x^2 + x - 6)$

$6x^5 + 2x^4 - 12x^3$

Directions: Simplify each expression.

11) $(2x + 3)(4x + 1)$

$8x^2 + 2x + 12x + 3$

$8x^2 + 14x + 3$

12) $(3x - 2)(2x + 5)$

$6x^2 + 15x - 4x - 10$

$6x^2 + 11x - 10$

13) $(6x - 5)(3x - 4)$

$18x^2 - 24x - 15x + 20$

$18x^2 - 39x + 20$

14) $(2x - 3)^2$

$(2x - 3)(2x - 3)$

$4x^2 - 6x - 6x + 9$

$4x^2 - 12x + 9$

15) $5a^2(2a + 3b)$

$$10a^3 + 15a^2 b$$

16) $5[x - 3(4x - 6)]$

$$5[x - 12x + 18]$$
$$5[-11x + 18]$$
$$-55x + 90$$

17) Subtract $3x^2 - 2x + 1$ from $2x^2 + 4x - 5$

$$1^{st}$$
$$-3x^2 + 2x - 1$$
$$\overline{-x^2 + 6x - 6}$$

18) $\frac{3}{4}x^2 - 4x + 2x^2 - \frac{1}{2}x$

$$2.75x^2 - 4.5x$$

19) $(3x - 2x^2 + 1) + (x^2 + 4x - 9)$

$$-x^2 + 7x - 8$$

20) $(6x^2 + 4x)^2$

$$(6x^2 + 4x)(6x^2 + 4x)$$
$$36x^4 + 24x^3 24x^3 + 16x^2$$
$$36x^4 + 48x^3 + 16x^2$$