Mastery Checkpoint 3: The Law of Exponents and Polynomials Toolkit

Laws of Exponents

Law	Examples	
$x^m x^n = x^{m+n}$ for all x		
$\frac{x^m}{x^n} = x^{m-n}$ for $x \neq 0$		
$(x^m)^n = x^{mn}$ for all x		
$x^0 = 1$ for $x \neq 0$		
$x^{-1} = \frac{1}{x}$ for $x \neq 0$		
$x^{m/n} = \sqrt[n]{x^m}$ for $x \geq 0$		

	Expression	Generalization	Why is this true?
a.	$x^{25} \cdot x^{40} = ?$	$x^m \cdot x^n = ?$	
b.	$\frac{x^{36}}{x^{13}} = ?$	$\frac{x^m}{x^n} = ?$	
c.	$(x^5)^{12} = ?$	$(x^m)^n = ?$	
d.	$k^{-5} = ?$	$x^{-1} = \frac{1}{x}$	

Changing forms

The line $-6x + 2y = 10$ is written in **standard form: ax + by = c**. Can you easily tell what the slope of the line is? m=____. It's starting value? b=_____

Solve for y
a.　$-6x + 2y = 10$

Solve for x
b. $9x - 3y = 15$

Solve Absolute Value Equations

One way to solve absolute value equations is to think about "looking inside" the absolute value. The "inside" must be positive or negative, so you should solve the equation both ways. For example, you could record your steps as shown below.

$$|5 - 2x| = 19$$

$$5 - 2x = 19 \qquad\qquad 5 - 2x = -19$$
$$-2x = 14 \qquad\qquad -2x = -24$$
$$x = -7 \qquad\qquad x = 12$$

Solve the equation. Be sure to find all possible answers and check your solutions
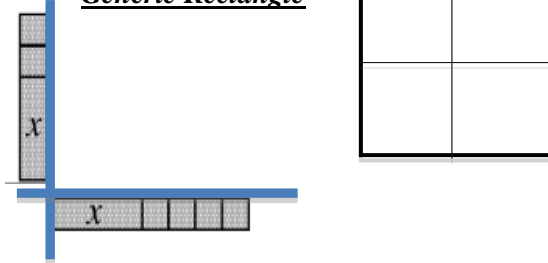
a. $|9 + 3x| = 39$　　　　　　　　Check

Multiply (x+2)(x+4).
Write answer as a product and a sum.

G	g
G GG	Gg
g Gg	gg

Multiply   2(x+4)

Using Tiles: **_With Generic Rectangle_**
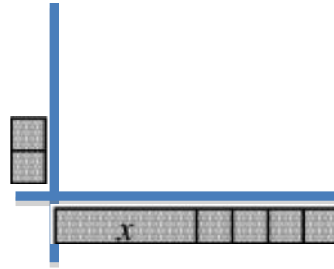
Using Tiles: **_With Generic Rectangle_**

_____ = _____
            Product   Sum
        base times height   area

_____ = _____
            Product   Sum
        base times height   area

The Distributive Property states that for any three terms *a,b,* and *c* that *a* gets multiplied by each term inside.

$$a(b+c) =$$

Examples: Multiply the following:

   2(x+4)

   3x(x - 2y + 3)

   (x+2)(x+4)

Is it true that $(x + 9)^2 = x^2 + 81$?

If an equation has parenthesis ( ), this means the first step could be multiplying. Multiply with the distributive property or generic rectangles to eliminate the ( ), then solve using "legal moves".

Ex: Solve for x: Steps
   $4 - 3(x + 2) = 19$

Check: