

HEIGHT BASE
Area

$(\text{BASE})(\text{HEIGHT}) = \text{Area}$

LC MATH I

FACTORED

SIMPLIFIED/
MULTIPLIED

Final Review #4 : Quadratic Expressions

Multiply - "write in standard form"
 "Simplify"

Multiply monomial by binomial

$$\begin{array}{cc} 3x & (x-5) \\ \text{A} & \text{B} \end{array}$$

w/BOX:
$$3x \begin{array}{|c|c|} \hline x & -5 \\ \hline \end{array}$$

$$= \boxed{3x^2 - 15x}$$

w/o BOX:
$$3x(x-5)$$

$$= \boxed{3x^2 - 15x}$$

Multiply two binomials, including perfect squares

$$\begin{array}{cc} (2x-5) & (x+3) \\ \text{B} & \text{H} \end{array}$$

w/BOX:
$$\begin{array}{c} 2x \quad -5 \\ \hline x \begin{array}{|c|c|} \hline 2x^2 & -5x \\ \hline \end{array} \\ 3 \begin{array}{|c|c|} \hline 6x & -15 \\ \hline \end{array} \end{array}$$

$$= \boxed{2x^2 + x - 15}$$

w/o BOX:
$$(2x-5)(x+3)$$

$$= 2x^2 + 6x - 5x - 15$$

$$= \boxed{2x^2 + x - 15}$$

Two-step multiplication

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

FIRST: multiply the binomials

$$= -2(x^2 - 4x + 5x - 20)$$

$$= -2(x^2 + x - 20)$$

SECOND: Distribute the monomial

$$= \boxed{-2x^2 - 2x + 40}$$

Multiply and combine like terms

$$(x-7)^2 + 2(x-1)$$

MULTIPLY FIRST

$$= (x-7)(x-7) + 2(x-1)$$

$$= x^2 - 14x + 49 + 2x - 2$$

ADD/SUBTRACT SECOND

$$= \boxed{x^2 - 12x + 47}$$

FACTOR

~~Multiply~~

Common Factor

w/ Box

$$-5x^2 + 30x$$

x	-6
$-5x$	$-5x^2 \quad 30x$

$$= -5x(x-6)$$

USE DIVISION:

$$-5x^2 + 30x = -5x(x-6)$$

Simple Trinomial

$$2x^2 - 9x - 5$$

	x	-5
$2x$	$2x^2$	$-10x$
1	x	-5

$$= (x-5)(2x+1)$$

w/o Box ... Guess & check mentally

Two-Step Factoring

$$3x^2 - 12x - 15$$

FIRST, common factor

$$= 3(x^2 - 4x - 5)$$

SECOND, factor trinomial

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

$$= 3(x-5)(x+1)$$

Difference of Squares

$$a^2 - b^2 = (a+b)(a-b)$$

\uparrow \uparrow
 Perfect Squares

- ① $x^2 - 9 = (x+3)(x-3)$
- ② $x^2 - \frac{1}{4} = (x+\frac{1}{2})(x-\frac{1}{2})$
- ③ $x^2 - 25y^2 = (x+5y)(x-5y)$
- ④ $49x^2 - 1 = (7x+1)(7x-1)$