

Section 8.3 Multiplying Binomial

Students will be able to multiply two binomials or a binomial by a trinomial.

SOLVE IT! Getting Ready!

A park has a rectangular dog run with length 30 ft and width 20 ft. The parks department wants to expand each end of each side of the dog run by the same amount x . What will be the total area of the expanded dog run? Justify your reasoning.

There are several ways to find the product of 2 binomials, including models, algebra and tables.

Use the distributive property:

$$(x - 6)(4x + 3)$$

$$(x - 6)(4x) + (x - 6)(3)$$

$$4x^2 - 24x + 3x - 18$$

$$4x^2 - 21x - 18$$

Multiply:

$$(-3x - 5)(x - 10)$$

$$(x - 10)(-3x) + (x - 10)(-5)$$

$$-3x^2 + 30x - 5x + 50$$

$$-3x^2 + 25x + 50$$

When you use the Distributive Property to multiply binomials, you multiply each term in the first binomial by each term in the second.

A table can also be used to help organize the problem.

Use a table:

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

	$3x$	$+1$
x	$3x^2$	$+x$
$+4$	$+12x$	$+4$

$3x^2 + 13x + 4$

Use a table:

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

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

$-2x^2 - 14x - 20$

Use the Distributive Property to multiply:

$(x - 4)(3x + 1)$

	x	-4
$3x$	$3x^2$	$-12x$
$+1$	$+x$	-4

Now, label the boxes with which pieces are multiplied together.

This process for multiplying is called the FOIL Method.

F- First times First
O- Outside times Outside
I- Inside times Inside
L- Last times Last

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

$x^2 + 3x - 2x - 6 = x^2 + x - 6$

Use FOIL

$(x - 3)(x + 4)$

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

$x^2 + x - 12$

Use FOIL

$(2x - 3)(x - 6)$

$2x^2 - 12x - 3x + 18$

$2x^2 - 15x + 18$

Use any method to multiply:

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

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

$$2x^2 - 13x + 15$$

What is the total surface area of a cylinder with radius $x + 2$ and height $x + 4$?

$$2\pi r^2 \quad 2\pi rh$$

Area of two circles. Area of curved surface.

$$2\pi(x+2)^2 + 2\pi(x+2)(x+4)$$

$$2\pi(x+2)(x+2) + 2\pi(x+2)(x+4)$$

$$2\pi(x^2 + \overset{+4x}{2x+2} + 4) + 2\pi(x^2 + \overset{+6x}{4x+2} + 8)$$

$$2\pi x^2 + 8\pi x + 8\pi + 2\pi x^2 + 12\pi x + 16\pi$$

$$4\pi x^2 + 20\pi x + 24\pi$$

Hwk: pg. 502

#10 - 26 (4th), 30 - 44 evens, 48

Attachments

8-3cont.notebook