

9.2 Warm-Up

1. Simplify $-2(9a - b)$. $= -2 \cdot 9a + -2(-b) = -18a + 2b$
2. Simplify $r^2s \cdot rs^3$. r^3s^4 . $r^2 \cdot r \cdot s \cdot s^3$
3. The number of hardback h and paperback p books (in hundreds) sold from 1999–2005 can be modeled by $h = 0.2t^2 - 1.7t + 14$ and $p = 0.17t^3 - 2.7t^2 + 11.7t + 27$ where t is the number of years since 1999. About how many books sold in 2003?

$$\begin{array}{r} 0.2t^2 - 1.7t + 14 \\ + 0.17t^3 - 2.7t^2 + 11.7t + 27 \\ \hline \end{array}$$

$$0.17t^3 - 2.5t^2 + 10t + 41$$

$$0.17 \cdot 4^3 - 2.5 \cdot 4^2 + 10 \cdot 4 + 41$$

$$\begin{aligned} t &= 2003 - 1999 \\ &= 4 \end{aligned}$$

$$\approx 52$$

Multiplying Polynomials

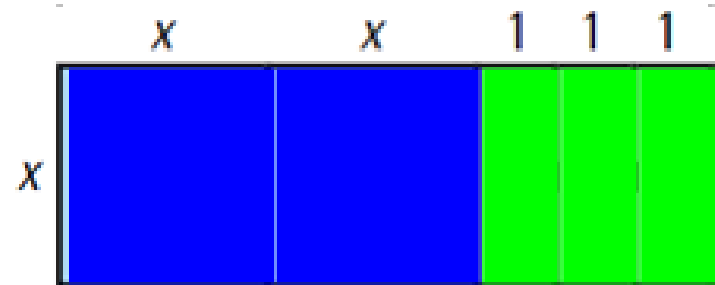
Find the product.

$$x(2x + 3)$$

$$1x \cdot 2x + x \cdot 3$$

$$1 \cdot 2 \cdot x \cdot x$$

$$2x^2 + 3x$$



Distributive property?

Find the product.

$$x(7x^2 + 4)$$

$$x \cdot 7x^2 + x \cdot 4$$

$$7x^3 + 4x$$

Find the product.

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

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

$$2x^6 + 6x^5 - 4x^4 + 10x^3$$

Find the product

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

$$3x^2 \cdot 2x^3 + 3x^2(-x^2) + 3x^2(4x) + 3x^2(-3)$$

$$3 \cdot 2 \cdot x^2 \cdot x^3$$

$$6x^5 - 3x^4 + 12x^3 + -9x^2$$

Find the product. Use a table.

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

$$(x + -4)(3x + 2) = x \cdot 3x + x \cdot 2 + -4 \cdot 3x + -4 \cdot 2$$
$$3x^2 + 2x + -12x + -8$$

	$3x$	2
x	$3x^2$	$2x$
-4	$-12x$	$2(-4) = -8$

$$3x^2 + \underline{2x} - \underline{12x} + -8$$

$$3x^2 - 10x - 8$$

Find the product.
Use a table.

$$(a + 3)(2a + 1)$$

	$2a$	1
a	$2a^2$	$1a$
3	$6a$	3

$$2a^2 + 1a + 6a + 3$$

$$2a^2 + 7a + 3$$

Multiply vertically.

Find the product $(b^2 + 6b - 7)(3b - 4)$.

$$\begin{array}{r} b^2 + 6b - 7 \\ \times \quad 3b - 4 \\ \hline -4b^2 - 24b + 28 \\ + 3b^3 + 18b^2 - 21b + 0 \\ \hline 3b^3 + 14b^2 - 45b + 28 \end{array}$$

Find the product. Multiply vertically.

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

$$\begin{array}{r} x^2 + 2x + 1 \\ \times \quad \quad \quad x + 2 \\ \hline + x^3 + 2x^2 + 1x + 0 \\ \hline x^3 + 4x^2 + 5x + 2 \end{array}$$

Find the product. Multiply horizontally.

$$(\underline{2x^2} + \underline{5x} - \underline{1})(4x - 3)$$

$$2x^2 \cdot 4x + 2x^2(-3) + 5x \cdot 4x + 5x(-3) - 1 \cdot 4x - 1(-3)$$

$$8x^3 + \underline{-6x^2} + 20x^2 + \underline{-15x - 4x} + 3$$

$$8x^3 + 14x^2 - 19x + 3$$

Find the product. Multiply horizontally.

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

	$3y^2$	$-y$	5
$2y$	$6y^3$	$-2y^2$	$10y$
-3	$-9y^2$	$3y$	-15

$$6y^3 - 2y^2 - 9y^2 + 10y + 3y - 15$$

$$6y^3 - 11y^2 + 13y - 15.$$

Find the product. Use the vertical or horizontal method.

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

$$2x^2 - x - 2$$

$$\times \quad 3x - 1$$

$$- 2x^2 + 1x + 2$$

$$+ 6x^3 - 3x^2 - 6x + 0$$

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

Multiply using FOIL.

$$(4b - 5)(b - 2)$$

First Outside Inside

First
Outside
Inside
Last

$$4b \cdot b + 4b(-2) + -5 \cdot b + -5(-2)$$

$$4b^2 + -8b + -5b + 10$$

$$4b^2 - 13b + 10$$

Multiply using FOIL.

$$(3a + 4)(a - 2)$$

$$3a \cdot a + 3a(-2) + 4 \cdot a + 4(-2)$$

$$3a^2 - 6a + 4a - 8$$

$$3a^2 - 2a - 8$$

Find the product. Use the table or FOIL method.

$$(4a + 3)(a + 2)$$

$$4a \cdot a + 4a \cdot 2 + 3 \cdot a + 3 \cdot 2$$

$$4a^2 + 8a + 3a + 6$$

$$4a^2 + 11a + 6$$

The dimensions of a rectangle are $x + 3$ and $x + 2$. Which expression represents the area of the rectangle?

- A $x^2 + 6$ B $x^2 + 5x + 6$ C $x^2 + 6x + 6$ D $x^2 + 6x$

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

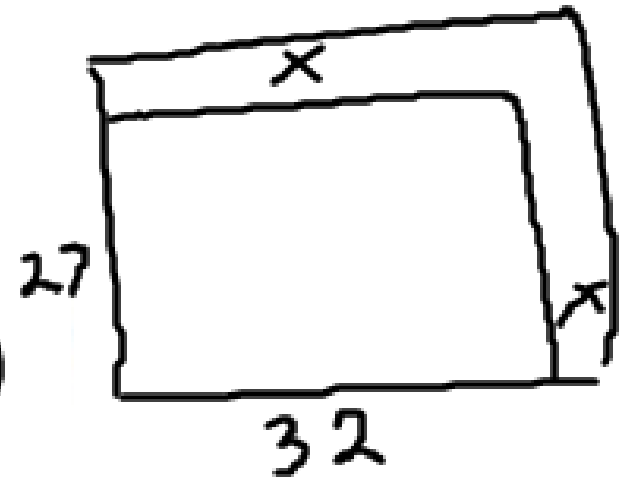
	x	2
x	x^2	$2x$
3	$3x$	6

$$x^2 + 2x + 3x + 6$$

$$x^2 + 5x + 6$$

SKATEBOARDING You are designing a rectangular skateboard park on a lot that is on the corner of a city block. The park will have a walkway along two sides. The dimensions of the lot and the walkway are shown in the diagram.

- Write a polynomial that represents the area of the skateboard park. $(27+x)(32+x)$
- What is the area of the park if the walkway is 3 feet wide?



$$(27+3)(32+3) = 30 \cdot 35$$

Homework:

pp 565-568

#'s 2-14 E, 17, 20, 22,
25, 28-32 E, 37, 50