

2.2 Multiplying Polynomials

p. 64



Multiply a monomial and a polynomial

Find the product $3x^3(2x^3 - x^2 - 7x - 3)$.

$$= 3x^3(\underline{2x^3}) - 3x^3(\underline{x^2}) - 3x^3(\underline{7x}) - 3x^3(\underline{3})$$
$$\underline{6x^6} \quad \underline{-3x^5} \quad \underline{-21x^4} \quad \underline{-9x^3}$$

When you have the same base & multiply exponents, add them.

$$6x^6 - 3x^5 - 21x^4 - 9x^3$$



Find the product $(2x^2)(x^3 - 5x^2 + 3x - 7)$.

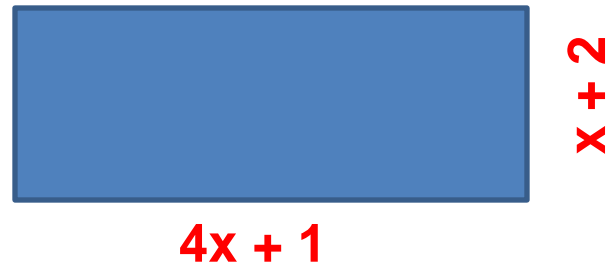
$$2x^2(x^3) - 2x^2(5x^2) + 2x^2(3x) - 2x^2(7)$$

$$2x^5 - 10x^4 + 6x^3 - 14x^2$$

$$2x^5 - 10x^4 + 6x^3 - 14x^2$$



The dimensions of a rectangle are $4x + 1$ and $x + 2$. Draw an area model. Then write an expression for the area of the rectangle.



Area = length X width

$$\text{Area} = (4x + 1)(x + 2)$$



Multiply polynomials horizontally

Find the product $(3b^2 - 2b + 5)(5b - 6)$.

$$= \underline{3b^2} (5b - 6) - \underline{2b} (5b - 6) + \underline{5} (5b - 6)$$

$$\underline{15b^3} - \underline{\underline{18b^2}} - \underline{\underline{10b^2}} + \underline{\underline{12b}} + \underline{\underline{25b}} - \underline{30}$$

$$15b^3 - 28b^2 + 37b - 30$$



Multiply binomials

Find the product $(2c + 7)(c - 9)$.

$$= 2c(\underline{c}) + 2c(\underline{-9}) + 7(\underline{c}) + 7(\underline{-9})$$

$$\begin{array}{cccc} 2c^2 & -18c & +7c & -63 \\ \hline \end{array}$$

$$2c^2 - 11c - 63$$



$$(m + 3)(5m - 4)$$

$$m(5m) + m(-4) + 3(5m) + 3(-4)$$

$$5m^2 - 4m + 15m - 12$$

$$5m^2 + 11m - 12$$



$$(2k - 3)(7k - 8)$$

$$2k(7k) + 2k(-8) - 3(7k) - 3(-8)$$

$$14k^2$$

$$-16k$$

$$-21k$$

$$+ 24$$

$$14k^2 - 37k + 24$$



Multiply polynomials using a volume model

Write a polynomial for the volume of the rectangular prism shown.

Volume = length • width • height

$$(x+6) \quad (x) \quad (x+3)$$

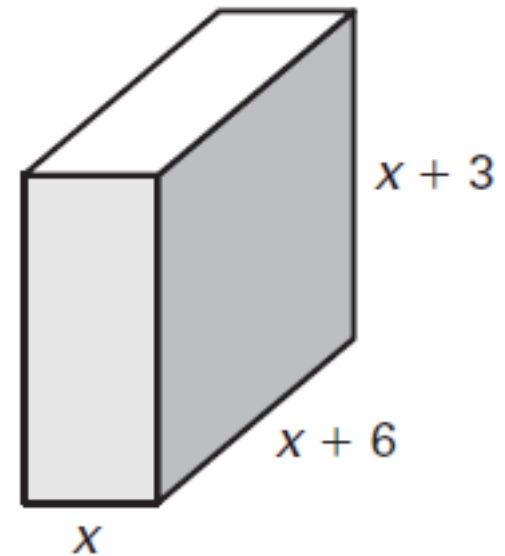
$$= [x(x) + 6(x)] (x+3)$$

$$= [x^2 + 6x] (x+3)$$

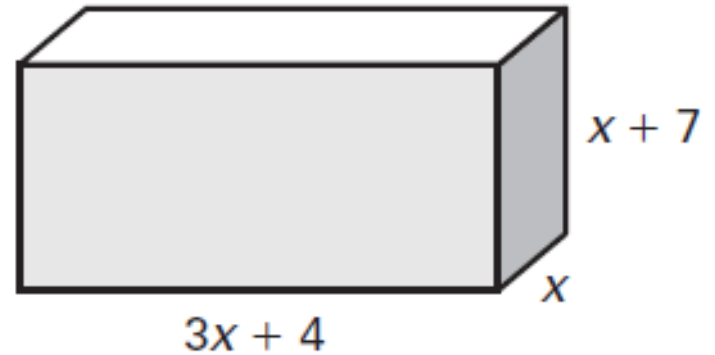
$$x^2(x) + x^2(3) + 6x(x) + 6x(3)$$

$$x^3 + 3x^2 + 6x^2 + 18x$$

$$x^3 + 9x^2 + 18x$$



Write an expression for the volume of the prism shown.



Volume = length • width • height

$$(3x + 4) (x) (x + 7)$$



2.2 Multiply Polynomials

p. 64

p. 66 2-22 even

p. 67 18, 20

