LESSON	**Reteach**
3-2	*Multiplying Polynomials*

Use the Distributive Property to multiply a monomial and a polynomial.

Think: $k(x + y + z) = kx + ky + kz$

Multiply: $2ab^2(3a^2b - 4ab^2 - b^3)$.

$2ab^2$ is a monomial. $3a^2b - 4ab^2 - b^3$ is a polynomial.

$2ab^2(3a^2b - 4ab^2 - b^3)$

$2ab^2(3b^2b) + 2ab^2(-4ab^2) + 2ab^2(-b^3)$ *Distribute* $2ab^2$.

$2(3)(a \cdot a^2)(b^2 \cdot b) + 2(-4)(a \bullet a)(b^2 \cdot b^2) + 2(-1)(a)(b^2 \cdot b^3)$ *Group like terms.*

$6a^3b^3 - 8a^2b^4 - 2ab^5$ *Multiply.*

Remember: Add the exponents of like bases to multiply.

Find each product.

1. $4x^2(x^2 + 2x - 3)$

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

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

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2. $c^2d^2(3c^2 - cd + 7d^2)$

   $c^2d^2(3c^2) + c^2d^2(-cd) + c^2d^2(7d^2)$

   $3(c^2 \cdot c^2)(d^2) - (c^2 \cdot c)(d^2 \cdot d)$
   $+ 7c^2(d^2 \bullet d^2)$

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3. $5xy^2(x^3 + 4x^2 + 2)$

   $5xy^2(x^3) + 4xy^2(4x^2) + 5xy^2(2)$

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4. $3a^2b^2(8a^2 - 2ab - b^2)$

   $3a^2b^2(8a^2) + 3a^2b^2(-2ab)$
   $+ 3a^2b^2(-b^2)$

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5. $2y^3(y^2 - 9y + 4)$

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6. $x^2y^2(4x^2 + 7y)$

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Holt McDougal Algebra 2

LESSON 3-2

Reteach

Multiplying Polynomials (continued)

Use the Distributive Property to multiply two polynomials.

Distribute each term of the first polynomial to each term of the second polynomial.

Multiply: $(x + 2)(4x^2 - 3x - 1)$.

Horizontal Method: $(x + 2)(4x^2 - 3x - 1)$

Distribute x to each term of $(4x^2 - 3x - 1)$.	Distribute 2 to each term of $(4x^2 - 3x - 1)$.

$[x(4x^2) + x(-3x) + x(-1)] + [2(4x^2) + 2(-3x) + 2(-1)]$

$4x^3 - 3x^2 - x + 8x^2 - 6x - 2$ *Multiply.*

$4x^3 - 3x^2 + 8x^2 - x - 6x - 2$ *Group like terms.*

$4x^3 + 5x^2 - 7x - 2$ *Combine like terms.*

Vertical Method:

Align like terms.

Combine like terms.

$$4x^2 - 3x - 1$$
$$\underline{\qquad x + 2}$$
$$8x^2 - 6x - 2$$
$$\underline{4x^3 - 3x^2 - x\qquad}$$
$$4x^3 + 5x^2 - 7x - 2$$

Multiply $4x^2 - 3x - 1$ by 1.

Multiply $4x^2 - 3x - 1$ by x.

Use the horizontal method to find each product.

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

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

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8. $(a + b)(a^2 + ab - 4b)$

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Use the vertical method to find each product.

9. $x^2 + 4x - 6$
$\underline{\qquad x + 2}$

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10. $y^2 - 3y + 1$
$\underline{\qquad y - 1}$

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