

Name: Key

Date: \_\_\_\_\_

Multiply:

1.  $4x(3x^2 + 4x - 8)$

$$12x^3 + 16x^2 - 32x$$

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

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

$$x^2 + x - 6$$

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

$$8x^2 + 2x + 12x + 3$$

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

4.  $(3x^2+7)(5x^3-6)$

$$15x^5 + 35x^3 - 18x^2 - 42$$

$$15x^5 + 35x^3 - 18x^2 - 42$$

5.  $(3x-6)(3x+6)$

$$9x^2 - 36$$

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

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

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

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

$$6x^4 + 9x^3 - 15x^2 + 4x^2 + 6x - 10$$

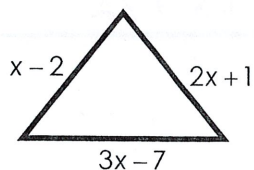
$$6x^4 + 9x^3 - 11x^2 + 6x - 10$$

8.  $(x-3)(5x^5-7x^3+1x^2+4)$

$$5x^6 - 7x^4 + 1x^3 + 4x - 15x^5 + 21x^3 - 3x^2 - 12$$

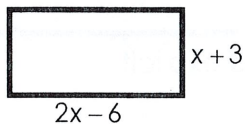
$$5x^6 - 15x^5 - 7x^4 + 22x^3 - 3x^2 + 4x - 12$$

9. Perimeter:



$$6x - 8$$

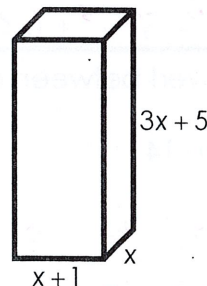
10. Area:



$$2x^2 + 6x - 6x - 18$$

$$2x^2 - 18$$

11. Volume:



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

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

$$3x^3 + 5x^2 + 3x^2 + 5x$$

$$3x^3 + 8x^2 + 5x$$

Using the following functions, perform the operations.

$$f(x) = x^3 + 8x^2$$

$$g(x) = x^2 + 3x + 9$$

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

$$j(x) = x - 4$$

1. Find  $j(x) \cdot f(x)$

$$(x-4)(x^3+8x^2)$$

$$x^4 + 8x^3 - 4x^3 - 32x^2$$

$$x^4 + 4x^3 - 32x^2$$

2. Find  $j(x) \cdot g(x)$

$$(x-4)(x^2+3x+9)$$

$$x^3 + 3x^2 + 9x - 4x^2 - 12x - 36$$

$$x^3 - x^2 - 3x - 36$$

3. Find  $f(x) \cdot g(x)$

$$(x^3+8x^2)(x^2+3x+9)$$

$$x^5 + 3x^4 + 9x^3 + 8x^4 + 27x^3 + 72x^2$$

$$x^5 + 11x^4 + 33x^3 + 72x^2$$

4. Find  $f(x) \cdot 2j(x)$

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

$$(x^3+8x^2)(2x-8)$$

$$2x^4 - 8x^3 + 16x^3 - 64x^2$$

$$2x^4 + 8x^3 - 64x^2$$

5. Find  $j(x) \cdot h(x)$

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

$$x^4 - 2x^3 + x^2 - 4x^3 + 8x^2 - 4x$$

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

6. Find  $f(x) \cdot 3g(x)$

$$(x^3+8x^2) \cdot 3(x^2+3x+9)$$

$$(x^3+8x^2)(3x^2+9x+27)$$

$$3x^5 + 9x^4 + 27x^3 + 27x^4 + 72x^3 + 216x^2$$

$$3x^5 + 33x^4 + 99x^3 + 216x^2$$

7. Find  $f(x) \cdot h(x) \cdot j(x)$

$$(x^3+8x^2)(x^3-2x^2+x)(x-4)$$

$$(x^6-2x^5+x^4+8x^5-16x^4+8x^3)(x-4)$$

$$(x^6+6x^5-15x^4+8x^3)(x-4)$$

$$x^7+6x^6-15x^5+8x^4-4x^6-24x^5+60x^4-32x^3$$

$$x^7+2x^6-39x^5+68x^4-32x^3$$

8. Find  $g(x) \cdot -2j(x)$

$$(x^2+3x+9) \cdot -2(x-4)$$

$$(x^2+3x+9)(-2x+8)$$

$$-2x^3 + 8x^2 - 6x^2 + 24x - 18x + 72$$

$$-2x^3 + 2x^2 + 6x + 72$$

**Review:** Convert between recursive and explicit

9.  $a_n = 2n - 14$

$$a_n = a_{n-1} + 2; a_1 = -12$$

10.  $a_n = a_{n-1} + 6$   
 $a_1 = -2$

$$a_n = 6n - 8$$

11.  $a_n = a_{n-1} - 4$   
 $a_1 = 15$

$$a_n = -4n + 19$$

12.  $a_n = -30n + 15$

$$a_n = a_{n-1} - 30; a_1 = -15$$