Concept: Multiplying Expressions

Name:

COMPUTER COMPONENT: Part A

Instructions: In UMATH X follow the **Content Menu** path:

Algebra > **Multiplying Expressions**

Work through all Sub Lessons of the following Lessons **in order**:

- *Our Problem*
- *Recall Tile Concepts*
- *Multiplying Monomials*
- *Multiplying Monomials and Binomials*

NOTE: You will not be finishing the entire section before stopping to complete some **OFF COMPUTER EXERCISES**.

Additional Required Materials: *Colored pencils.*

As you work through the computer exercises, you will be prompted to make notes in your notebook/math journal.

When you reach the end of the lesson *Multiplying Monomials and Binomials* on the computer, move on to the **OFF COMPUTER EXERCISES** below.

SUMMARY: Part A

We know that…

In order to multiply powers with the same base, we ADD the exponents.

Example: $(a^5)(a^4) = a^9$

Demonstrate your previous knowledge of 'Tile Concepts' by completing the table below.

Description	Drawing	Area
A unit tile		
An x tile		
An x^2 tile		
A y tile		

A y^2 tile		
An xy tile		

Fill in the spaces below to create notes for Multiplying Monomials… **with Tiles**

Example 1: Use tiles to completely fill this 3 units $\times$ $2x$ units rectangle.

We can find the total area by adding up all of the shapes in the rectangle.

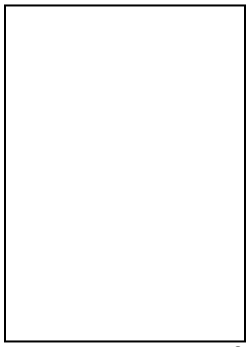
_____+ _____+ _____+ _____+ _____+ _____= _____x

ALSO, we can find the total area by multiplying the length and the width together.

Area = length $\times$ width = _____ $\times$ _____ = $6x$

Which procedure do you think is the most efficient?
*Why?*_____

Example 2: Use tiles to completely fill this $3x$ units $\times$ $2x$ units rectangle.



We can find the total area by adding up all of the shapes in the rectangle.

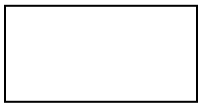
_____+ _____+ _____+ _____+ _____+ _____ = _____x^2

ALSO, we can find the total area by multiplying the length and the width together.

Area = length × width = _____ × _____ = $6x^2$

Fill in the spaces below to create notes for multiplying Monomials by Binomials ... With Tiles

Example 1: Use tiles to completely fill this 2 units by (x + 1) units rectangle.



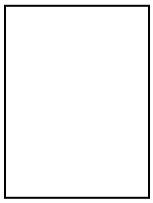
We can find the total area by adding up all of the shapes in the rectangle.

_____+ _____+ _____+ _____ = _____

ALSO, we can find the total area by multiplying the length and the width together.

Area = length × width = _____ × _____ = $2x + 2$

Example 2: Use tiles to completely fill this $2x$ units by (x + 1) units rectangle.



We can find the total area by adding up all of the shapes in the rectangle.

_____+ _____+ _____+ _____= _____

ALSO, we can find the total area by multiplying the length and the width together.

Area = length × width = _____ × _____ = $2x^2 + 2$

We know that…

The _____law shows us how to multiply a monomial with a binomial.

Example: 2 (x + 5) = _____(x) + _____(5) = _____

OFF COMPUTER EXERCISES: PART A

1. Find the product for the following.

(a) $2^3 \times 2^4 =$_____ (b) $5^6 \times 5^2 =$ _____

(c) $a^3 \times a^6 =$_____ (d) $y^5 \times y =$ _____

2. (a) Use tiles to fill a rectangle that is 3 units by (x+1) units. *Be sure to use a ruler.*

(b) Use tiles to fill a rectangle that is 3x units by (x+1) units. Be sure to use a ruler.

(c) What is the total area of the rectangle in part (a)?

_____

_____

_____

(d) What is the total area of the rectangle in part (b)?

_____

_____

_____

3. Find the product of these monomials. You may use tiles to support your understanding of the concept.

Example: $\mathbf{(-3a^3)(5a^2)}$

$= -3 \times a^3 \times 5 \times a^2$

$= -3 \times 5 \times a^3 \times a^2$

$= -15\, a^6$

(a) $(-5x^2)(6x^5)$

=

=

=

(b) $(2b)(3b)$

=

=

=

(c) $(-6a^4)(-3a^5)$

=

=

=

(d) $(-7v)(-3v^4)$

=

=

=

(e) $(d^2\,e^3)(2d\,e^3)$

=

=

=

(f) $(-10r^5)(2r^3)(-4r^4)$

=

=

=

(g) $\left(\frac{1}{2}n\right)\left(\frac{1}{3}n\right)$

=

=

=

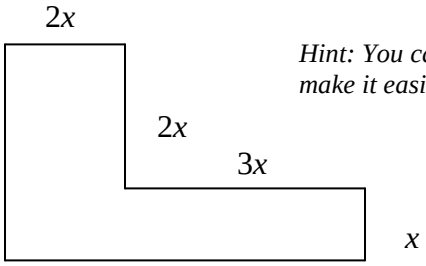
(h) $\left(-\frac{2}{3}x^2y^3\right)\left(-\frac{3}{4}x^3y^4\right)$

=

=

=

4. Find the area of this figure.



Hint: You can do something to this shape to make it easier to work with.

Remember to show all of your thinking in the space below.

_____

_____

_____

_____

5. Simplify the following expressions by using the distributive law.

Example: **5a(a - 2)**

= 5a(a) - 5a(2)

= $5a^2$ - 5(2)a

= $5a^2$ - 10a

(a) a (a + b)

=

=

=

(b) 3a (2a + 3b - 4c)

=

=

=

(c) 4m (-2m + 4y)

=

=

=

(d) 4 (x + 2)

=

=

=

(e) -3 (2d + 4)

=

=

=

(f) p (2p -1)

=

=

=

(g) 6f (2f -3)

=

=

=

(h) -5mn (4mn + 8m - 2n)

=

=

=