

Examples

SMART Ink Multiplying Polyno

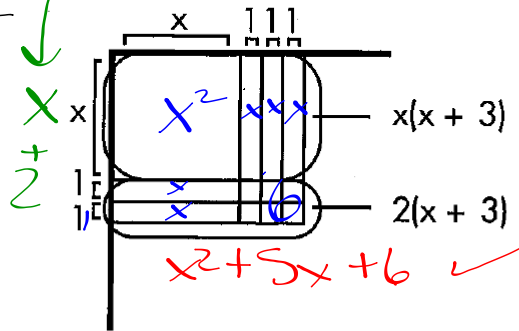
Create another example for the product $(x + 2)(x + 3)$.

Let \square represent x^2 , \square represent x , and \square represent 1

$$\begin{array}{l} x(x+3) \\ + 2(x+3) \\ \hline x^2 + 3x \\ 2x + 6 \\ \hline x^2 + 5x + 6 \end{array}$$

Use your Product Mat to form the rectangular array like a timestable

x	1	x	3
1	1	$1x$	3
2	2	$2x$	6
3	3	$3x$	9

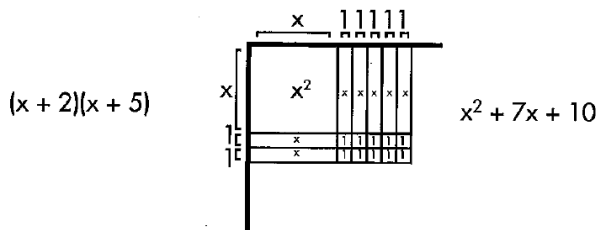
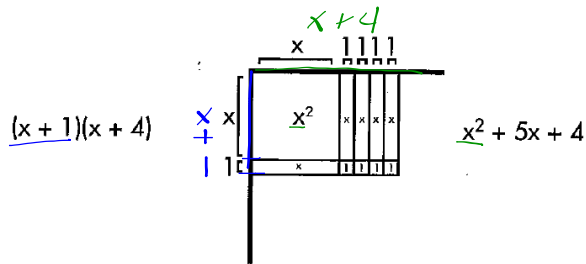


The rectangle formed is equal to $x^2 + 5x + 6$.

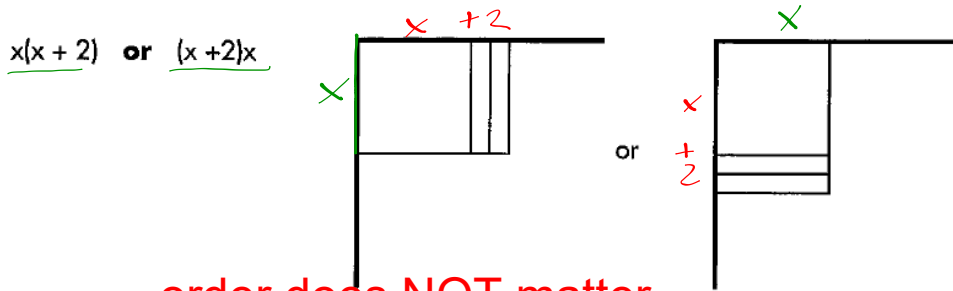
Note that the Distributive Property is used twice. Also, notice how the model illustrates traditional multiplication.

Practicing the Concept

Ask students to use their Algebra Tiles™ to model the following:



Show that the length and width can be portrayed as follows:



order does NOT matter
 $3 \cdot 2 = 2 \cdot 3$. multiplying is commutative

Mult Worksheet 1

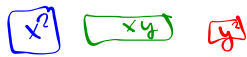
Polynomial	Model
1. $(x+2)(x+3) = x^2 + 5x + 6$	
2. $(x+4)(x) = x^2 + 4x$	
3. $(x+1)(x+6) = x^2 + 7x + 6$	

length · width = Area

Mult Worksheet 2

Polynomial	Model
1. $x(x+1)$ $= x^2 + 1x$	
2. $(x+1)(x+3)$ $= x^2 + 4x + 3$	
3. $(x+2)(x+2)$ $= x^2 + 4x + 4$	

Mult Worksheet 3



Polynomial	Model
1. $(x+2y)(x+y)$ $= x^2 + 3xy + 2y^2$	
2. $3x(x+y)$ $= 3x^2 + 3xy$	
3. $x(3x+2y)$ $= 3x^2 + 2xy$	

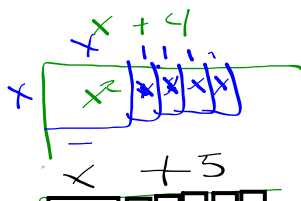


Multiplying Polynomials Extra Practice

Name _____

Multiply.

1. $x(x+4)$
 $= x^2 + 4x$

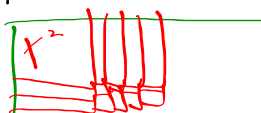


2. $(x+1)(x+5)$
 $= x^2 + 6x + 5$

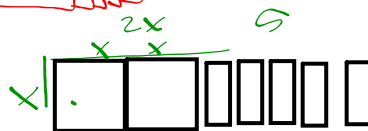


$(x+1)(x+5)$
 $+ x^2 + 5x$
 $x^2 + 6x + 5$

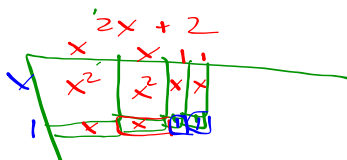
3. $(x+2)(x+4)$
 $= x^2 + 6x + 8$



4. $x(2x+5)$
 $= 2x^2 + 5x$

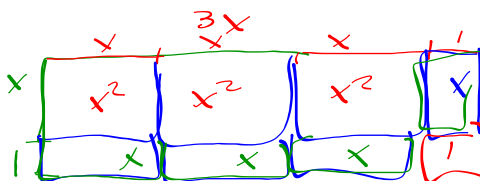


5. $(x+1)(2x+2)$
 $= 2x^2 + 4x + 2$



6. $(2x+3)(x+2)$
 $=$ _____

7. $(3x+1)(x+1)$
 $= 3x^2 + 4x + 1$



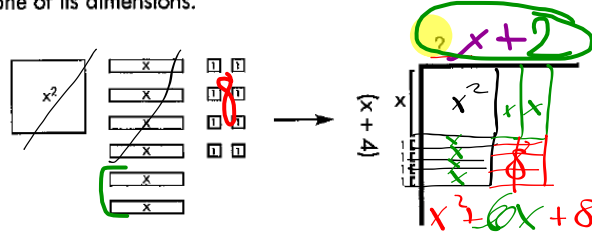
8. $(2x+2)(x+1)$
 $=$ _____

9. $(x+3)(3x+4)$
 $=$ _____

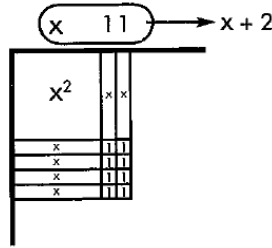
10. $(2x+5)(x+2)$
 $=$ _____

Dividing = find the missing side

To model $(x^2 + 6x + 8) \div (x + 4)$, you must arrange six x tiles and eight 1 tiles in a rectangular array that has $(x + 4)$ as one of its dimensions.



From your experience with modeling multiplication, you saw that a rectangular array can be formed by placing the x^2 tile at the upper left corner of the array, the 1 tiles at the lower right and the x tiles at the lower left and upper right.

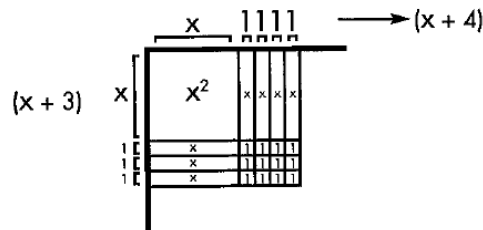


Thus, $(x^2 + 6x + 8) \div (x + 4) = x + 2$.

Practicing the Concept

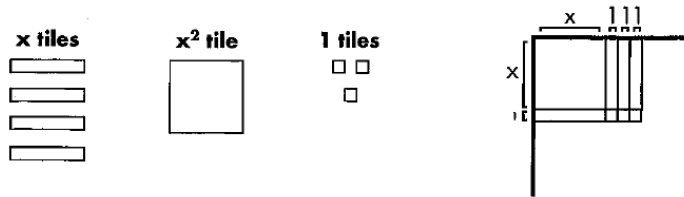
Ask students to use their Algebra Tiles™ to model the following:

$(x^2 + 7x + 12) \div (x + 3) = \underline{\hspace{2cm}}$



Practicing the Concept

Display the following tiles and ask students to derive the length and width.


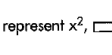



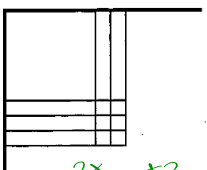
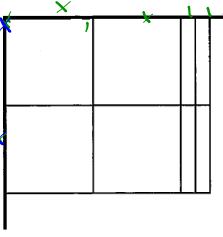
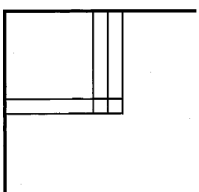
Area = $4x + x^2 + 3$ Dimensions = $(x + 3)(x + 1)$

Dividing Trinomials Worksheet 1

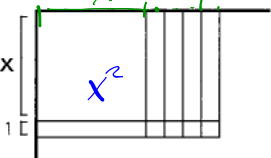
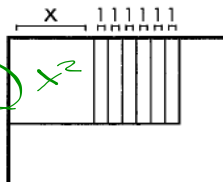
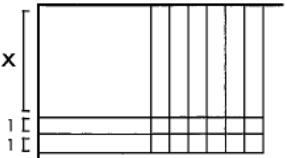
Name _____

Use the model and your Algebra Tiles™ to determine each rectangle's length and width.

Let  represent x^2 ,  represent x , and  represent 1.

Dimensions	area
1. (____)(____) Area = _____	
2. $(2x+2)(2x)$ = $4x^2+4x$	
3. (____)(____) = _____	

Dividing Worksheet 2

Dimensions	Area
1. $(x+1)(x+4)$	 Area = x^2+5x+4
2. $(x)(x+6)$	 Area = x^2+6x
3. $(x+2)(\text{____})$	 Area = _____

Dividing Worksheet 3

Dimensions	Area
1. $(x+4)(x+4)$ Area = $x^2 + 8x + 16$	
2. $(x)(x+4)$ Area = $x^2 + 4x$	
3. $(x+1)(x+2)$ Area = $x^2 + 3x + 2$	

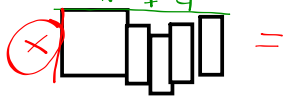
Dividing Trinomials: Extra Practice

Name _____

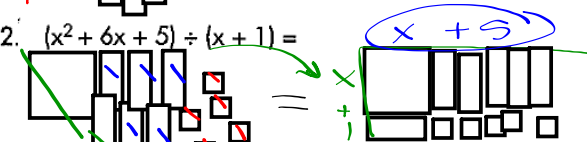
Use your Algebra Tiles™ and Product Mat and draw tile models to find the missing dimension (length or width) of the rectangle to divide these trinomials.

Given Area side = missing side?

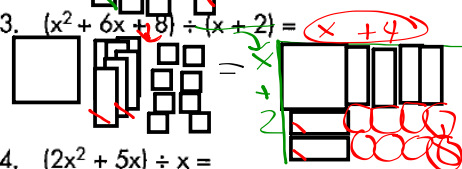
1. $(x^2 + 4x) \div (x + 4) = x$



2. $(x^2 + 6x + 5) \div (x + 1) =$



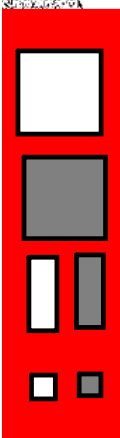
3. $(x^2 + 6x + 8) \div (x + 2) =$



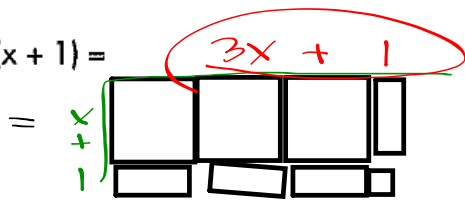
4. $(2x^2 + 5x) \div x =$

5. $(2x^2 + 4x + 2) \div (2x + 2) =$

6. $(2x^2 + 7x + 6) \div (x + 2) =$



7. $(3x^2 + 4x + 1) \div (x + 1) =$



8. $(2x^2 + 4x + 2) \div (2x + 2) =$

9. $(3x^2 + 13x + 12) \div (x + 3) =$

10. $(2x^2 + 9x + 10) \div (x + 2) =$