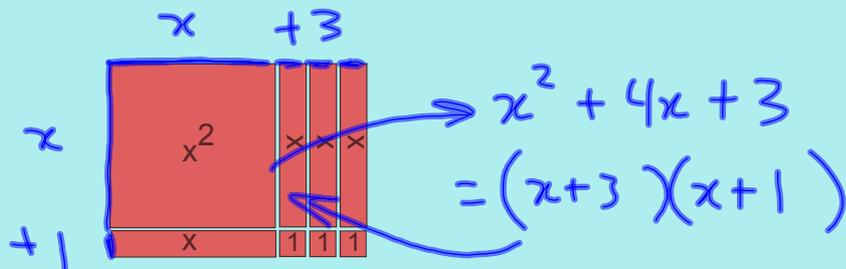
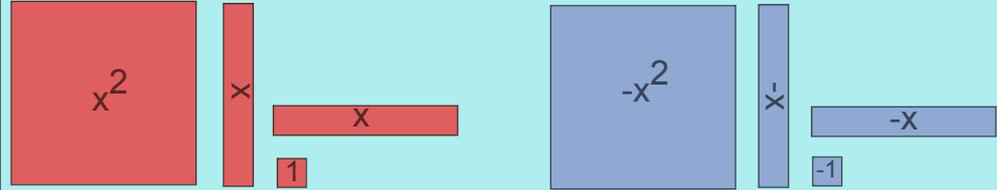


What does the area represent?  
What are the side lengths?

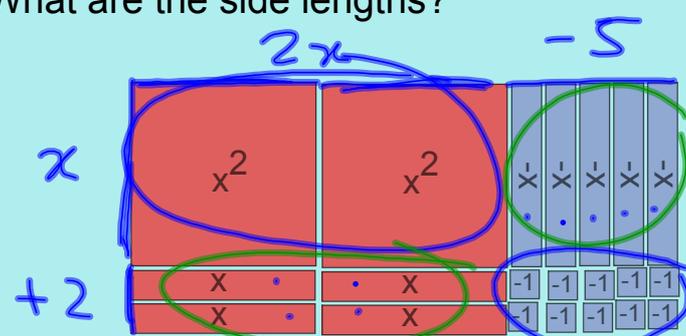


Handwritten diagram showing a large rectangle formed by algebra tiles. The top side is labeled  $x + 3$  and the left side is labeled  $x + 1$ . The tiles include one  $x^2$  tile, three  $x$  tiles, and three  $1$  tiles. The area is labeled  $x^2 + 4x + 3 = (x+3)(x+1)$ .

Mar 25-8:02 AM



What does the area represent?  
What are the side lengths?



Handwritten diagram showing a large rectangle formed by algebra tiles. The top side is labeled  $2x - 5$  and the left side is labeled  $x + 2$ . The tiles include two  $x^2$  tiles, five  $x$  tiles, and ten  $1$  tiles. The area is labeled  $(2x-5)(x+2) = 2x^2 - x - 10$ .

Mar 25-8:02 AM

Multiplying Polynomials & Expanding Binomials

Oct 25/2011

Recall: Multiplying two linear terms together forms an area.

We can often represent this multiplication using algebra tiles.

On paper, we can represent this:  
 (a) graphically (an area model), or  
 (b) algebraically

Mar 26-8:24 AM

## Definitions:

1. Monomial - an expression with a single term

$3x$  or  $7$  or  $5xy$  or  $a^2bc^3$

 $\frac{x}{2}$ 

2. Binomial - an expression with two terms

$(2x + 5)$  or  $(a + 2b)$  or  $(m^2 - pq)$

What is a term? numbers or variables separated by multiplication or division

3. Trinomial - an expression with three terms

$x^2 + 5x + 6$  or  $2xy + a + 5$

4. Polynomial - an expression with any number of terms.

Mar 26-8:43 AM

Red tiles:  $x^2$ ,  $x$ ,  $1$

Blue tiles:  $-x^2$ ,  $-x$ ,  $-1$

---

Evaluate:  $(x - 1)(x - 2) = x^2 - 3x + 2$

	$x$	$-1$	
$x$	$x^2$	$-x$	$1$
$-2$	$-2x$	$2$	

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Ex.1 Evaluate using an area model

(a)  $(x - 1)(x - 2)$

	$x$	$-1$
$x$	$x^2$	$-x$
$-2$	$-2x$	$2$

$$= x^2 - x - 2x + 2$$

$$= x^2 - 3x + 2$$

Oct 24-11:29 PM

Evaluate:  $(2x + 7)(3x - 5)$  f

	$2x$	$+ 7$	
$3x$	$x^2$	$x^2$	$x$
$-5$	$x^2$	$x^2$	$7x$
	$x^2$	$x^2$	$7x$
	$-x$	$-5x$	$-35$

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(Ex.1 Expand using an area model... continued)

(b)  $(2x + 7)(3x - 5) = 6x^2 + 21x - 10x - 35$   
 $= 6x^2 + 11x - 35$

	$2x$	$+ 7$
$3x$	$6x^2$	$21x$
$-5$	$-10x$	$-35$

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Ex.2 Expand using the distributive property

(a)  $2x(3x - 4)$

$$= 6x^2 - 8x$$

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

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

$$= 10x^2 + 4x + 15x + 6$$

$$= 10x^2 + 19x + 6$$

	$2x$	$+3$
$5x$	$10x^2$	$15x$
$+2$	$4x$	$6$

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Ex.3 Expand using FOIL (First-Outer-Inner-Last)

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

$$= 6x^2 + 21x - 10x - 35$$

$$= 6x^2 + 11x - 35$$

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Assigned Work:

p.166-167 # 3 - 5 (odd)  
# 8 - 10 (odd)

$$\begin{array}{ccc}
 \underbrace{\bigcirc}_{13k} + \underbrace{\bigcirc}_{14A} + \frac{1}{2} \underbrace{\bigcirc}_{10C} & = & \bigcirc \\
 100\% & & 50\% \\
 13 & & 14 & & 5 & = & \overline{32}
 \end{array}$$

Mar 26-9:06 AM

$$\begin{aligned}
 9(c) \quad & 6x(x+1)^2 \\
 & = 6x(x+1)(x+1) \\
 & = 6x(x^2+x+x+1) \\
 & = 6x(x^2+2x+1) \\
 & = 6x^3 + 12x^2 + 6x
 \end{aligned}$$

	$x$	$+1$
$x$	$x^2$	$x$
$+1$	$x$	$1$

FOIL

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9(e)  $(4x-1)(4x+1) - (x+3)^2$

$$= (4x-1)(4x+1) - (x+3)(x+3)$$

	$4x$	$-1$
$4x$	$16x^2$	$-4x$
$+1$	$4x$	$-1$

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

$$= (16x^2 - 4x + 4x - 1) - (x^2 + 3x + 3x + 9)$$

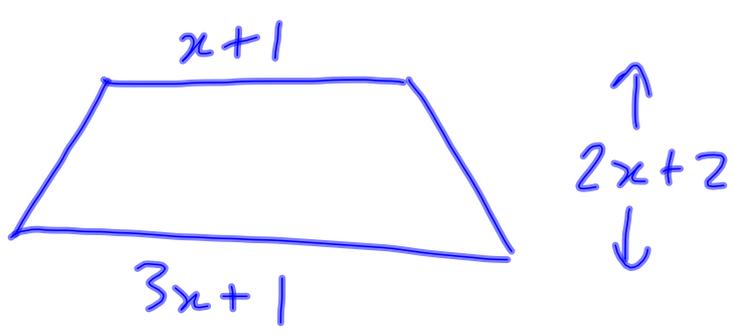
$$= 1(16x^2 - 1) - 1(x^2 + 6x + 9)$$

$$= 16x^2 - 1 - x^2 - 6x - 9$$

$$= 15x^2 - 6x - 10$$

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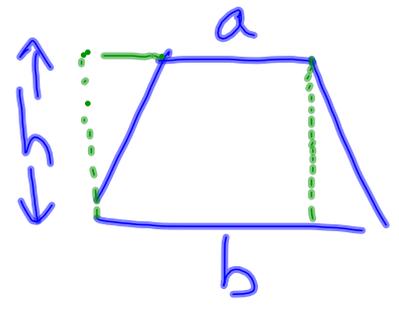
8(d)



$x+1$

$3x+1$

$2x+2$



$a$

$b$

$h$

$$A = \frac{(a+b)h}{2}$$

$$A = \frac{(x+1+3x+1)(2x+2)}{2}$$

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