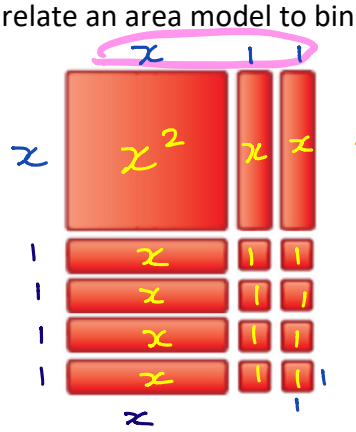
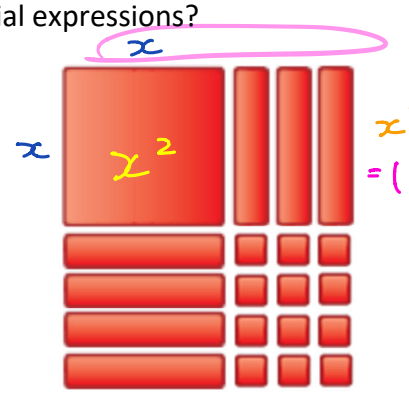
Name: _____ Date: _____

Learning Goal 1.2	Factor trinomials of the form $ax^2 + bx + c$.

How we can relate an area model to binomial products and trinomial expressions?



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



$x^2 + 7x + 12$
$= (x+3)(x+4)$

But, you cannot use this model forever.

- limited to 2 dimensions
- +ve/-ve is confusing

Example Factor the following expression. Expand your answer to check your work.

a. $x^2 + 10x + 16$

2 × 8 = 16
2 + 8 = 10

1 16
2 8
4 4

$= x^2 + 2x + 8x + 16$
$= x(x+2) + 8(x+2)$
$= (x+2)(x+8)$

b. $x^2 - 2x - 8$

$\pm 1 \quad \pm 8$
$\pm 2 \quad \pm 4$

$+2 \times -4 = -8$
$+2 + -4 = -2$

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

c. $z^2 - 12z + 35$

$\pm 1 \quad \pm 35$
$\pm 5 \quad \pm 7$

$-5 \times -7 = 35$
$-5 + -7 = -12$

$= (z-5)(z-7)$

d. $m^2 - 8m + 7$

$-1 \times -7 = 7$
$-1 + -7 = -8$

$= (m-1)(m-7)$

e. $a^2 + 7a - 18$

$\pm 1 \quad \pm 18$
$\pm 2 \quad \pm 9$
$\pm 3 \quad \pm 6$

$-2 \times +9 = -18$
$-2 + +9 = 7$

$= (a-2)(a+9)$

f. $q^2 - 7q - 18$

$-9 \times 2 = -18$
$-9 + 2 = -7$

$= (q-9)(q+2)$

g. $p^2 + 7p - 18$

$9 \times -2 = -18$
$9 + -2 = 7$

$= (p+9)(p-2)$

Example What are all the possible values of a? For each value, factor the expression.

$$x^2 + ax + 24$$

1	24
2	12
3	8
4	6

$\_ \times \_ = 24$
$\_ + \_ = a$

Both +ve
$a = 25, 14, 11, 10$

Both -ve
$a = -25, -14, -11, -10$