

Example 1: Expand  $(x + 3)(2x - 1)$ :

Box/Grid (Punnett square) method:

- Create a grid with each term of one polynomial listed across the top and each term of the second polynomial listed down one side.
- Fill in each box within the grid by multiplying the row by the column.
- Simplify the products.

Expand  $(x + 3)(2x - 1)$


Expand  $(2x + 1)(3x - 1)$

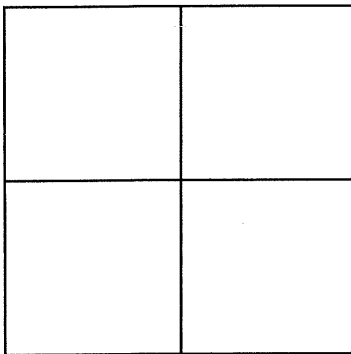

Example 2: Factor using factoring rules:  $x^2 + 8x + 16$

Example 2b: Complete the square using the area model.

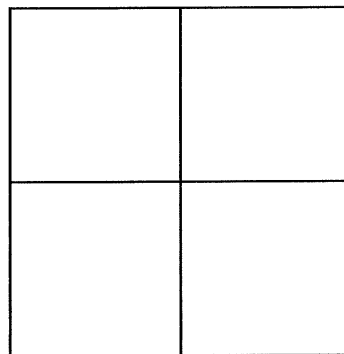
7.  $(x + 4)^2$


Complete the square using the area model.

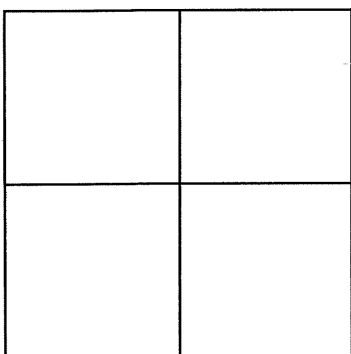
7.  $x^2 + 6x$  \_\_\_\_\_



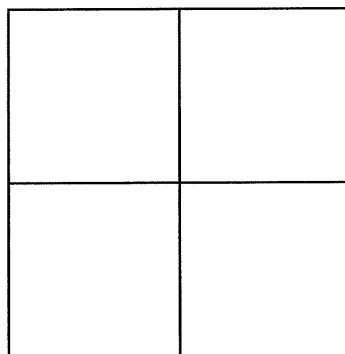
8.  $x^2 - 2x$  \_\_\_\_\_



9.  $x^2 - 12x$  \_\_\_\_\_



10.  $x^2 + 14x$  \_\_\_\_\_



**Solving Equations:**

11.  $x^2 = 9$

12.  $x^2 = 16$

13.  $(x + 5)^2 = 12$

14.  $(x - 6)^2 = 18$

15.  $(x - 1)^2 = 5$

16.  $(x + 2)^2 = 11$

Example 1: Expand  $(x + 3)(2x - 1)$ :

$$2x^2 - 1x + 6x - 3$$

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

Box/Grid (Punnett square) method:

- Create a grid with each term of one polynomial listed across the top and each term of the second polynomial listed down one side.
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- Simplify the products.

Expand  $(x + 3)(2x - 1)$

Rectangle shape

	$x$	$3$
$2x$	$2x^2$	$6x$
$-1$	$-1x$	$-3$

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

Expand  $(2x + 1)(3x - 1)$

	$2x$	$1$
$3x$	$6x^2$	$3x$
$-1$	$-2x$	$-1$

$$6x^2 + x - 1$$

Example 2: Factor using factoring rules:  $x^2 + 8x + 16$

1) order ✓

2) GCF ✓

$$\frac{4}{4} \times \frac{4}{4} = 16$$

$$\frac{4}{4} + \frac{4}{4} = 8$$

$$\frac{x^2}{x} + \frac{4x}{x} + \frac{4x}{4} + \frac{16}{4}$$

$$x(x+4) + 4(x+4)$$

$$(x+4)(x+4)$$

$$(x+4)^2$$

Example 2b: Complete the square using the area model.

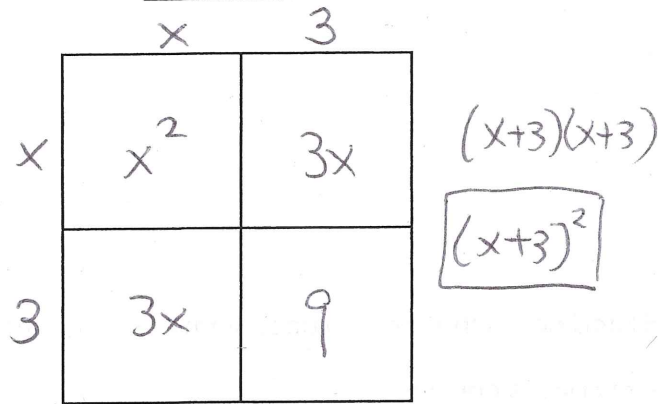
7.  ~~$x^2 + 4x$~~   $(x+4)(x+4)$

$$x^2 + 8x + 16$$

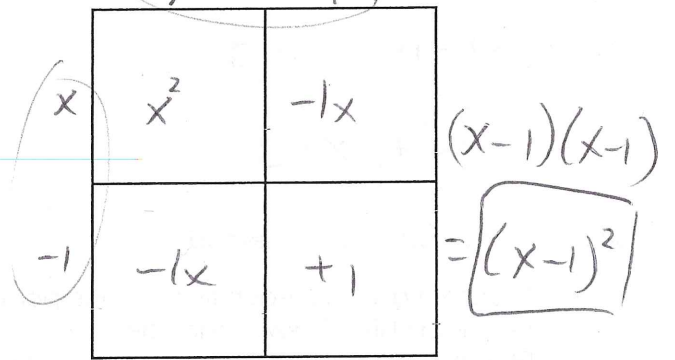
	$x$	$4$
$x$	$x^2$	$4x$
$4$	$4x$	$16$

Complete the square using the area model.

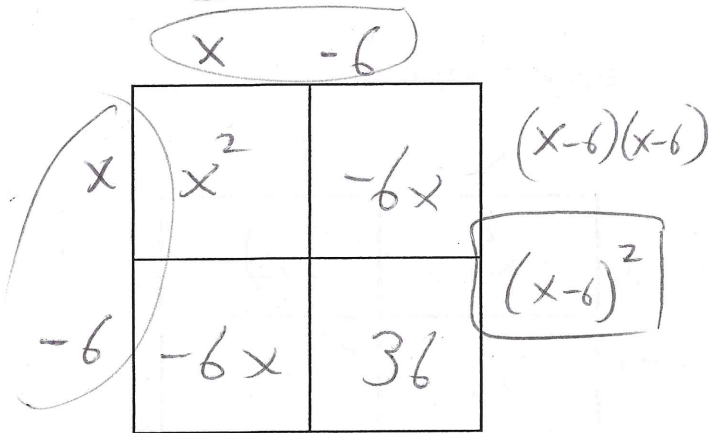
7.  $x^2 + 6x + 9$



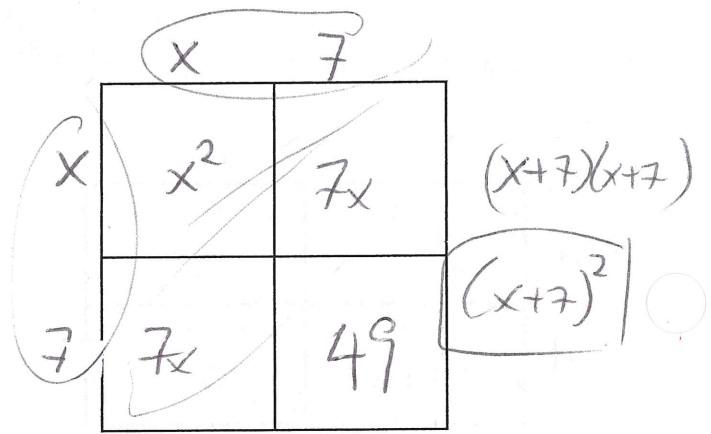
8.  $x^2 - 2x + 1$



9.  $x^2 - 12x + 36$



10.  $x^2 + 14x + 49$



Solving equations

11)  $x^2 - 9 = 0$      $\sqrt{x^2} = \pm\sqrt{9}$   
 $x = 3, -3$

12)  $x^2 - 16 = 0$      $\sqrt{x^2} = \pm\sqrt{16}$   
 $x = \pm 4$

13)  $(x+5)^2 = 12$

$x+5 = \pm\sqrt{12}$   
 $x = \pm\sqrt{12} - 5$

14)  $(x-6)^2 = 18$

$x-6 = \pm\sqrt{18}$   
 $x = 6 \pm\sqrt{18}$

15)  $(x-1)^2 = 5$

$x-1 = \pm 5$

$x = 1 \pm 5$

$x = 1+5$	$x = 1-5$
$x = 6$	$x = -4$

16)  $(x+2)^2 = 11$

$x+2 = \pm\sqrt{11}$

$x = -2 \pm\sqrt{11}$