Name _____ Date _____

# Squaring a Trinomial

Example

| × | $a$ | $b$ | $c$ |
|---|---|---|---|
| $a$ | $a^2$ | $ab$ | $ac$ |
| $b$ | $ab$ | $b^2$ | $bc$ |
| $c$ | $ac$ | $bc$ | $c^2$ |

$(a+b+c)^2$

$= a^2 + b^2 + c^2 + 2ab + 2ac + 2bc$

The squares are on the diagonal, and every other product appears twice.

**Remember**

The square of a trinomial is **the sum of the squares of all the terms** plus **twice the product of every pair**. With negative terms, watch the sign of each product: $(x-y+1)^2$ has the term $-2xy$, but $+2x$ and $-2y$.

**1** ON YOUR OWN Complete the area model for $(x+y+2)^2$ and write the result.

| × | $x$ | $y$ | $2$ |
|---|---|---|---|
| $x$ | | | |
| $y$ | | | |
| $2$ | | | |

$(x+y+2)^2 =$

**2** ON YOUR OWN Draw the area model for $(a+2b+1)^2$ yourself and write the result.

| × | | | |
|---|---|---|---|
| | | | |
| | | | |
| | | | |

$(a+2b+1)^2 =$

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**3** ON YOUR OWN Square.

$(a + b + 1)^2 =$ ☐

$(x - y + 3)^2 =$ ☐

$(2a + b - c)^2 =$ ☐

$(x^2 + x + 1)^2 =$ ☐

**4** IN PAIRS **Find the mistake.** Lea wrote $(x + y + 1)^2 = x^2 + y^2 + 1 + 2xy + 2x$. Check by substituting $x = y = 1$ and correct it.

**5** ON YOUR OWN **The number 111.** Work out $111^2 = (100 + 10 + 1)^2$ without a calculator.

$111^2 =$ ☐

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Mode **Multiplying**: in the *Display* menu choose 2 variables and the letters $x, y, z$. Press *New task* until you get $(x + y + 1)^2$ and build the 3 × 3 grid.

★ ON YOUR OWN **Exit card.** $(a - b + 2)^2 =$ ☐