

Lesson 11-8

Problem

Find a pattern to help discover factors of perfect square trinomials that have a first-term coefficient of 1.

Solution

Use letters instead of numbers to represent the coefficient and constants.

Step 1: Work forward from a pair of binomial factors. The letter n , represents possible coefficients found in the second term of each monomial factor. The constants, or second term in each monomial are represented by y .

$$\text{General: } (x + n)(x + n)$$

$$\text{Specific: } (x + 5)(x + 5)$$

$$\begin{array}{cccc} \mathbf{F} & \mathbf{O} & \mathbf{I} & \mathbf{L} \\ \square & \square & \square & \square \\ = x^2 + xn + xn + n^2 \\ = x^2 + (2n)x + n^2 \end{array}$$

$$\begin{array}{cccc} \mathbf{F} & \mathbf{O} & \mathbf{I} & \mathbf{L} \\ \square & \square & \square & \square \\ = x^2 + 5x + 5x + 5^2 \\ = x^2 + (2 \cdot 5)x + 5^2 \\ = x^2 + 10x + 25 \end{array}$$

Step 2: Study the pattern. Carefully compare the general case to the specific case. With a first term coefficient of 1, the second term is 2 times the constant. The last term is the square of the constant.