Lesson 11-7

Example 1

Find second-term constants or coefficients for the binomial factors of these polynomials.

a. $x^2 - 5x + 6$ **b.** $x^2 - 2xy - 24y^2$

Solution

a. The product of the binomial second terms is 6, and the sum (a true sum because of the third term's positive sign) is 5. So the binomial second-term constants are 2 and 3 (because $2 \times 3 = 6$ and $2 + 3 = 5$).

The binomials will be in the form $(x \quad 2)(x \quad 3)$.

b. The product of the binomial second terms is 24, and their sum is 2. Because the third term's sign is negative, the binomial signs differ, so the sum will look like a difference.

Think of factors of 24 that have a difference of 2.

Factors	24 1	12 2	8 3	6 4
Difference	23	10	5	2

Stop here; 2 is the difference that you want.

The coefficients will be 6 and 4. The binomial will be in the form $(x \quad 6y)(x \quad 4y)$.

Example 2

In the two expressions given again, complete the binomial factors by determining the signs of the second terms.

a. $x^2 - 5x + 6$ **b.** $x^2 - 2xy - 24y^2$

Solution

a. The second trinomial term is negative, so the larger binomial second term has a negative sign. The third trinomial term is positive, so both binomial signs are the same-both negative.

The binomial factors are $(x - 2)(x - 3)$.

b. The second trinomial term is negative, so the larger binomial second term is also negative. The third trinomial term is also negative, so the two binomial signs are different.

The binomial factors are $(x - 6y)(x + 4y)$.

Example 3

PRODUCT DEVELOPMENT A software company determines that the cost of producing its new financial software is a product of the number of days spent working on the project and the number of programmers assigned to the project. The total cost is represented by $x^2 - 3x - 28$. Find the binomial factors.

Solution

The product of the binomial second terms is (-28) and the sum is (-3). So, the two binomial constants are 4 and (-7).

The binomial factors of $x^2 - 3x - 28$ are $(x + 4)(x - 7)$.