Intermediate Algebra

Skill Builder # PF - 5

Factoring Two-Variable Quadratic Trinomials with Leading Coefficient of 1

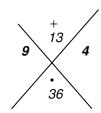
A two-variable quadratic trinomial with leading coefficient of 1 looks like

$$x^2 + bxy + cy^2$$
.

To factor such a trinomial find two numbers that multiply to the constant term c and that add up to the middle coefficient b.

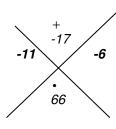
Examples

1. $x^2 + 13xy + 36y^2$ Solution:



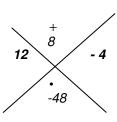
 \Rightarrow the factored form of $x^2 + 13xy + 36y^2$ is (x+9y)(x+4y)

2. $x^2 - 17xy + 66y^2$



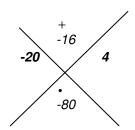
 \Rightarrow the factored form of $x^2 - 17xy + 66y^2$ is (x-11y)(x-6y)

3. $a^2 + 8ab - 48b^2$



 \Rightarrow the factored form of $a^2 + 8ab - 48b^2$ is (a+12b)(a-4b)

4. $m^2 - 16mn - 80n^2$



 \Rightarrow the factored form of $m^2 - 16mn - 80n^2$ is (m-20n)(m+4n)

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Factor the given quadratic trinomial.

1.
$$x^2 + 12xy + 35y^2$$

2.
$$x^2 - 15xy + 54y^2$$

3.
$$a^2 + 11ab - 60b^2$$

4.
$$a^2 - 13ab - 48b^2$$

5.
$$n^2 - 12nm - 85m^2$$

6.
$$m^2 + 8mn - 84n^2$$

7.
$$s^2 + 18st + 81t^2$$

8.
$$t^2 - 28ts + 160s^2$$

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Answers

1. (x+7y)(x+5y)

2. (x-6y)(x-9y)

3. (a+15b)(a-4b)

4. (a-16b)(a+3b)

5. (n-17m)(n+5m)

6. (m+14n)(m-6n)

7. (s+9t)(s+9t) or $(s+9t)^2$

8. (t-20s)(t-8s)

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